



SEQUENCE LISTING

<110> Nagaike, Kazuhiro  
Mori, Yasuko  
Gomi, Yasuyuki  
Takahashi, Michiaki  
Kouichi, Yamanishi

<120> Recombinant Varicella-Zoster Virus

<130> 59150-8037

<140> US 10/591,787

<141> 2007-07-30

<150> PCT/JP2005/003652

<151> 2005-03-05

<150> JP 2004-063277

<151> 2004-03-05

<160> 91

<170> PatentIn version 3.2

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<223> primer

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gcgagagcgt ttggaaaact cgggtacgtc taaattcacc ccagygcg atg gat acg 237  
 Met Asp Thr  
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 Leu Glu Leu Met Asp Leu Leu Asp Ala Ala Ala Ala Ala Ala Glu His  
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agg gcc cgg gtg gtc acc tcg agt cag cct gac gat cta cta ttt gga 381  
 Arg Ala Arg Val Thr Ser Ser Gln Pro Asp Asp Leu Leu Phe Gly  
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tcc gta tcg gga ctt caa cca gaa ccc aga acg gaa gat gtt ggc gaa Ser Val Ser Gly Leu Gln Pro Glu Pro Arg Thr Glu Asp Val Gly Glu 70 75 80	477
gag cta aca caa gac gac tac gta tgc gag gac ggt cag gat cta ayg Glu Leu Thr Gln Asp Asp Tyr Val Cys Glu Asp Gly Gln Asp Leu Xaa 85 90 95	525
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gag gcc ggc gcg cga gaa cca aca gga gcc gat cgc tcc ctc gag aca Glu Ala Gly Ala Arg Glu Pro Thr Gly Ala Asp Arg Ser Leu Glu Thr 120 125 130	621
gtc tct ctc gga acg aag ctt gct agg tct cca aaa cca ccg atg aac Val Ser Leu Gly Thr Lys Leu Ala Arg Ser Pro Lys Pro Pro Met Asn 135 140 145	669
gat ggg gaa acg ggc aga ggt acg acc cct ccg ttc ccg cag gcc ttc Asp Gly Glu Thr Gly Arg Gly Thr Thr Pro Pro Phe Pro Gln Ala Phe 150 155 160	717
tcc cct gta tcc ccc gcg tct cct gtt gga gac gcc gcc ggg aac gat Ser Pro Val Ser Pro Ala Ser Pro Val Gly Asp Ala Ala Gly Asn Asp 165 170 175	765
caa <sup>1</sup> cgg gaa gac cag cgg tct ata ccc cga caa acg acg aga gga aat Gln Arg Glu Asp Gln Arg Ser Ile Pro Arg Gln Thr Thr Arg Gly Asn 180 185 190 195	813
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aag agc ccg aag aaa aag act ttg aag gtt aag gtc cca ctc ccg gcg Lys Ser Pro Lys Lys Lys Thr Leu Lys Val Lys Val Pro Leu Pro Ala 245 250 255	1005
cgg aaa ccc ggt gga cct gta ccc ggc ccg gtt gag caa ttg tac cac Arg Lys Pro Gly Gly Pro Val Pro Gly Pro Val Glu Gln Leu Tyr His 260 265 270 275	1053
gtc ctt tcg gac agc gtt ccc gct aag ggg gca aag gcg gac ctg ccg Val Leu Ser Asp Ser Val Pro Ala Lys Gly Ala Lys Ala Asp Leu Pro 280 285 290	1101



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Phe Glu Thr Asp Asp Thr Arg Pro Arg Lys His Asp Ala Arg Gly Ile	
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aca cct cgc gtc cct gga cgt tcg tcg ggg ggc aaa cct aga gcg ttt	1197
Thr Pro Arg Val Pro Gly Arg Ser Ser Gly Gly Lys Pro Arg Ala Phe	
310 315 320	
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Leu Ala Leu Pro Gly Arg Ser His Ala Pro Asp Pro Ile Glu Asp Asp	
325 330 335	
agc ccg gtg gag aaa aag cca aag agt cgt gag ttt gtt tcg tct tca	1293
Ser Pro Val Glu Lys Lys Pro Lys Ser Arg Glu Phe Val Ser Ser Ser	
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Ser Ser Ser Ser Ser Trp Gly Ser Ser Ser Glu Asp Glu Asp Asp Glu	
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Pro Arg Arg Val Ser Val Gly Ser Glu Thr Thr Gly Ser Arg Ser Gly	
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Arg Glu His Ala Pro Ser Pro Ser Asn Ser Asp Asp Ser Asp Ser Asn	
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Asp Gly Gly Ser Thr Lys Gln Asn Ile Gln Pro Gly Tyr Arg Ser Ile	
405 410 415	
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Ser Gly Pro Asp Pro Arg Ile Arg Lys Thr Lys Arg Leu Ala Gly Glu	
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Pro Gly Arg Gln Arg Gln Lys Ser Phe Ser Leu Pro Arg Ser Arg Thr	
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Pro Ile Ile Pro Pro Val Ser Gly Pro Leu Met Met Pro Asp Gly Ser	
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Pro Trp Pro Gly Ser Ala Pro Leu Pro Ser Asn Arg Val Arg Phe Gly	
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Pro Ser Gly Glu Thr Arg Glu Gly His Trp Glu Asp Glu Ala Val Arg	
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Val Pro Glu Leu Gly Asp Pro Ala Arg Gln Tyr Arg Ala Leu Ile Asn	
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cgg gcc caa aaa cac ttt atc cta cag agt ctc cgc aga gcc ttt gcc Arg Ala Gln Lys His Phe Ile Leu Gln Ser Leu Arg Arg Ala Phe Ala 615 620 625	2109
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ccg cag ccg tcg gcc gcc gcg cgc tct ctt tct gtg tgt cca ccg gat Pro Gln Pro Ser Ala Ala Ala Arg Ser Leu Ser Val Cys Pro Pro Asp 660 665 670 675	2253
gat cgt tta cga act ccg cgc aag cgc aag tcc cag cca gtc gag agc Asp Arg Leu Arg Thr Pro Arg Lys Arg Lys Ser Gln Pro Val Glu Ser 680 685 690	2301
aga agc ctc ctc gac aag att agg gag aca ccc gtc gcg gac gcc cgg Arg Ser Leu Leu Asp Lys Ile Arg Glu Thr Pro Val Ala Asp Ala Arg 695 700 705	2349
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ccc gtg acc atc acc tcg ggc cct gtg gtg gat ccc ccc gcc gta ata Pro Val Thr Ile Thr Ser Gly Pro Val Val Asp Pro Pro Ala Val Ile 725 730 735	2445
acg atg cca ctt gac gga ccg gcc cca aac ggg gga ttt cgg cgt att Thr Met Pro Leu Asp Gly Pro Ala Pro Asn Gly Gly Phe Arg Arg Ile 740 745 750 755	2493
ccc cgg ggg gcc ctg cat acc ccg gtc ccg tcg gac cag gct cgc aag Pro Arg Gly Ala Leu His Thr Pro Val Pro Ser Asp Gln Ala Arg Lys 760 765 770	2541



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Ala Tyr Cys Thr Pro Glu Thr Ile Ala Arg Leu Val Asp Asp Pro Leu	
775 780 785	
ttt ccc acg gcc tgg cgc cct gcg cta agc ttt gat ccc ggc gcc ttg	2637
Phe Pro Thr Ala Trp Arg Pro Ala Leu Ser Phe Asp Pro Gly Ala Leu	
790 795 800	
gcg gaa atc gcc gct cgg cgt ccg ggc gga gga gac cga cgg ttt ggt	2685
Ala Glu Ile Ala Ala Arg Arg Pro Gly Gly Gly Asp Arg Arg Phe Gly	
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cca ccc agc gga gtg gag gcg ctg cga cgg agg tgc gcc tgg atg cgg	2733
Pro Pro Ser Gly Val Glu Ala Leu Arg Arg Arg Cys Ala Trp Met Arg	
820 825 830 835	
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Gln Ile Pro Asp Pro Glu Asp Val Arg Leu Leu Ile Ile Tyr Asp Pro	
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Leu Ala Ala Leu Ser Asn Arg Leu Cys Leu Pro Ser Thr His Ala Trp	
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gcc ggg aac tgg acc ggc ccg ccg gac gtg tcc gct ttg aac gcc ccg	2973
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gag tat cta ggc tcg cgg ttg gcc tct gcc ccg cgc ccg ttg ctg gtg	3069
Glu Tyr Leu Gly Ser Arg Leu Ala Ser Ala Arg Arg Arg Leu Leu Val	
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Leu Asp Ala Val Ala Leu Glu Arg Trp Pro Gly Asp Gly Pro Ala Leu	
950 955 960	
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Ser Gln Tyr His Val Tyr Val Arg Ala Pro Ala Arg Pro Asp Ala Gln	
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gcc gtc gtc cga tgg cca gac tcg gcg gtc aca gaa gga ctc gcc ccg	3213
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Ala Val Phe Ala Ser Ser Arg Thr Phe Gly Pro Ala Ser Phe Ala	
1000 1005 1010	



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Ala Ala Gly Pro Glu Ala Gly Asp Val Pro Thr Trp Ala Arg Val	
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Ser Ala Asp Glu Ala Arg Asn Ala Leu Pro Pro Ile Pro Arg Val	
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Asp Arg Glu His Ala Leu Glu Pro Asp Asp Trp Glu Val Gly Cys	
1225 1230 1235	



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Val Glu Leu Leu Ser Ser Ser Ser Ser Ser Glu Asp Glu Asp Asp	
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Val Trp Gly Gly Arg Gly Gly Arg Ser Pro Pro Gln Ser Arg Gly	
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35 40 45

Leu Phe Gly Glu Asn Gly Val Met Val Gly Arg Glu His Glu Ile Val
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50

55

60

Ser Ile Pro Ser Val Ser Gly Leu Gln Pro Glu Pro Arg Thr Glu Asp  
65 70 75 80

Val Gly Glu Glu Leu Thr Gln Asp Asp Tyr Val Cys Glu Asp Gly Gln  
85 90 95

Asp Leu Xaa Gly Ser Pro Val Ile Pro Leu Ala Glu Val Phe His Thr  
100 105 110

Arg Phe Ser Glu Ala Gly Ala Arg Glu Pro Thr Gly Ala Asp Arg Ser  
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Leu Glu Thr Val Ser Leu Gly Thr Lys Leu Ala Arg Ser Pro Lys Pro  
130 135 140

Pro Met Asn Asp Gly Glu Thr Gly Arg Gly Thr Thr Pro Pro Phe Pro  
145 150 155 160

Gln Ala Phe Ser Pro Val Ser Pro Ala Ser Pro Val Gly Asp Ala Ala  
165 170 175

Gly Asn Asp Gln Arg Glu Asp Gln Arg Ser Ile Pro Arg Gln Thr Thr  
180 185 190

Arg Gly Asn Ser Pro Gly Leu Pro Ser Val Val His Arg Asp Arg Gln  
195 200 205

Thr Gln Ser Ile Ser Gly Lys Lys Pro Gly Asp Glu Gln Ala Gly His  
210 215 220

Ala His Ala Ser Gly Asp Gly Val Val Leu Gln Lys Thr Gln Arg Pro  
225 230 235 240

Ala Gln Gly Lys Ser Pro Lys Lys Lys Thr Leu Lys Val Lys Val Pro  
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Leu Pro Ala Arg Lys Pro Gly Gly Pro Val Pro Gly Pro Val Glu Gln  
260 265 270

Leu Tyr His Val Leu Ser Asp Ser Val Pro Ala Lys Gly Ala Lys Ala  
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Asp Leu Pro Phe Glu Thr Asp Asp Thr Arg Pro Arg Lys His Asp Ala



290

295

300

Arg Gly Ile Thr Pro Arg Val Pro Gly Arg Ser Ser Gly Gly Lys Pro  
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Arg Ala Phe Leu Ala Leu Pro Gly Arg Ser His Ala Pro Asp Pro Ile  
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Asp Asp Glu Pro Arg Arg Val Ser Val Gly Ser Glu Thr Thr Gly Ser  
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Arg Ser Gly Arg Glu His Ala Pro Ser Pro Ser Asn Ser Asp Asp Ser  
 385 390 395 400

Asp Ser Asn Asp Gly Gly Ser Thr Lys Gln Asn Ile Gln Pro Gly Tyr  
 405 410 415

Arg Ser Ile Ser Gly Pro Asp Pro Arg Ile Arg Lys Thr Lys Arg Leu  
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Ala Gly Glu Pro Gly Arg Gln Arg Gln Lys Ser Phe Ser Leu Pro Arg  
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Ser Arg Thr Pro Ile Ile Pro Pro Val Ser Gly Pro Leu Met Met Pro  
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Asp Gly Ser Pro Trp Pro Gly Ser Ala Pro Leu Pro Ser Asn Arg Val  
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Arg Phe Gly Pro Ser Gly Glu Thr Arg Glu Gly His Trp Glu Asp Glu  
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Ala Val Arg Ala Ala Arg Ala Arg Tyr Glu Ala Ser Thr Glu Pro Xaa  
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Pro Leu Tyr Val Pro Glu Leu Gly Asp Pro Ala Arg Gln Tyr Arg Ala  
 515 520 525

Leu Ile Asn Leu Ile Tyr Cys Pro Asp Arg Asp Pro Ile Ala Trp Leu



530

535

540

Gln Asn Pro Lys Leu Thr Gly Val Asn Ser Ala Leu Asn Gln Phe Tyr  
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Gln Lys Leu Leu Pro Pro Gly Arg Ala Gly Thr Ala Val Thr Gly Ser  
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Val Ala Ser Pro Val Pro His Val Gly Glu Ala Met Ala Thr Gly Glu  
 580 585 590

Ala Leu Trp Ala Leu Pro His Ala Ala Ala Val Ala Met Ser Arg  
 595 600 605

Arg Tyr Asp Arg Ala Gln Lys His Phe Ile Leu Gln Ser Leu Arg Arg  
 610 615 620

Ala Phe Ala Gly Met Ala Tyr Pro Glu Ala Thr Gly Ser Ser Pro Ala  
 625 630 635 640

Ala Arg Ile Ser Arg Gly His Pro Ser Pro Thr Thr Pro Ala Thr Gln  
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Thr Pro Asp Pro Gln Pro Ser Ala Ala Ala Arg Ser Leu Ser Val Cys  
 660 665 670

Pro Pro Asp Asp Arg Leu Arg Thr Pro Arg Lys Arg Lys Ser Gln Pro  
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Val Glu Ser Arg Ser Leu Leu Asp Lys Ile Arg Glu Thr Pro Val Ala  
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Asp Ala Arg Val Ala Asp Asp His Val Val Ser Lys Ala Lys Arg Arg  
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Val Ser Glu Pro Val Thr Ile Thr Ser Gly Pro Val Val Asp Pro Pro  
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Ala Val Ile Thr Met Pro Leu Asp Gly Pro Ala Pro Asn Gly Gly Phe  
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Arg Arg Ile Pro Arg Gly Ala Leu His Thr Pro Val Pro Ser Asp Gln  
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Ala Arg Lys Ala Tyr Cys Thr Pro Glu Thr Ile Ala Arg Leu Val Asp



770

775

780

Asp Pro Leu Phe Pro Thr Ala Trp Arg Pro Ala Leu Ser Phe Asp Pro  
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Gly Ala Leu Ala Glu Ile Ala Ala Arg Arg Pro Gly Gly Gly Asp Arg  
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Trp Met Arg Gln Ile Pro Asp Pro Glu Asp Val Arg Leu Leu Ile Ile  
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Tyr Asp Pro Leu Pro Gly Glu Asp Ile Asn Gly Pro Leu Glu Ser Thr  
 850 855 860

Leu Ala Thr Asp Pro Gly Pro Ser Trp Ser Pro Ser Arg Gly Gly Leu  
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Ser Val Val Leu Ala Ala Leu Ser Asn Arg Leu Cys Leu Pro Ser Thr  
 885 890 895

His Ala Trp Ala Gly Asn Trp Thr Gly Pro Pro Asp Val Ser Ala Leu  
 900 905 910

Asn Ala Arg Gly Val Leu Leu Leu Ser Thr Arg Asp Leu Ala Phe Ala  
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Gly Ala Val Glu Tyr Leu Gly Ser Arg Leu Ala Ser Ala Arg Arg Arg  
 930 935 940

Leu Leu Val Leu Asp Ala Val Ala Leu Glu Arg Trp Pro Gly Asp Gly  
 945 950 955 960

Pro Ala Leu Ser Gln Tyr His Val Tyr Val Arg Ala Pro Ala Arg Pro  
 965 970 975

Asp Ala Gln Ala Val Val Arg Trp Pro Asp Ser Ala Val Thr Glu Gly  
 980 985 990

Leu Ala Arg Ala Val Phe Ala Ser Ser Arg Thr Phe Gly Pro Ala Ser  
 995 1000 1005

Phe Ala Arg Ile Glu Thr Ala Phe Ala Asn Leu Tyr Pro Gly Glu



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Glu Tyr Arg Gln Tyr Val Leu 1055	Pro Gly Phe Asp 1060	Gly Cys Lys Asp 1065
Leu Ala Arg Gln Ser Arg Gly 1070	Leu Gly Leu Gly 1075	Ala Ala Asp Phe 1080
Val Asp Glu Ala Ala His Ser 1085	His Arg Ala Ala 1090	Asn Arg Trp Gly 1095
Leu Gly Ala Ala Leu Arg Pro 1100	Val Phe Leu Pro 1105	Glu Gly Arg Arg 1110
Pro Gly Ala Ala Gly Pro Glu 1115	Ala Gly Asp Val 1120	Pro Thr Trp Ala 1125
Arg Val Phe Cys Arg His Ala 1130	Leu Leu Glu Pro 1135	Asp Pro Ala Ala 1140
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Val Val Arg Ser His Met Glu Asn Ser Lys Arg Leu Ala Asp Met Cys	
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Leu Ala Ala Ile Thr His Leu Tyr Leu Ser Val Gly Ala Val Asp Val	
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Thr Thr Asp Asp Ile Val Asp Gln Thr Leu Arg Met Thr Ala Glu Ser	
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Glu Val Val Met Ser Asp Val Val Leu Leu Glu Lys Thr Leu Gly Val	
390 395 400	



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Arg Lys															
885															
taataaataa acgtataaaa gacagtcgtg gtttgtgttt attataaatg tgtattatat	12017														
gtcacatatt ataaactgtt taaatagtag cacgtggtat tatgaacagt ttataatcag	12077														
ttgctaccaa acaaacccca ttagacggcg ggttttgata aagggaatcg cttattttaa	12137														



ctaaagattt tactctataa gt atg gag tgt aat tta gga acc gaa cat cct	12189
Met Glu Cys Asn Leu Gly Thr Glu His Pro	
890 895	
agt aca gat acg tgg aat cgt agt aaa acg gaa caa gcg gtt gtg gac	12237
Ser Thr Asp Thr Trp Asn Arg Ser Lys Thr Glu Gln Ala Val Val Asp	
900 905 910	
gca ttt gat gaa tcg ttg ttt ggt gat gta gca tcg gat att gga ttt	12285
Ala Phe Asp Glu Ser Leu Phe Gly Asp Val Ala Ser Asp Ile Gly Phe	
915 920 925	
gaa acg tcg tta tat tca cat gca gtt aaa act gct ccg tct ccg cct	12333
Glu Thr Ser Leu Tyr Ser His Ala Val Lys Thr Ala Pro Ser Pro Pro	
930 935 940	
tgg gta gct agc cct aaa att tta tat caa cag tta ata cgg gat ctt	12381
Trp Val Ala Ser Pro Lys Ile Leu Tyr Gln Gln Leu Ile Arg Asp Leu	
945 950 955 960	
gat ttt tca gaa ggg ccg cgt tta cta tca tgt ctt gaa acc tgg aac	12429
Asp Phe Ser Glu Gly Pro Arg Leu Leu Ser Cys Leu Glu Thr Trp Asn	
965 970 975	
gag gat tta ttc tca tgt ttt cct att aat gag gac cta tat tcc gat	12477
Glu Asp Leu Phe Ser Cys Phe Pro Ile Asn Glu Asp Leu Tyr Ser Asp	
980 985 990	
atg atg gtt tta tcc ccg gat cca gat gac gtt atc tca acc gtt tca	12525
Met Met Val Leu Ser Pro Asp Pro Asp Asp Val Ile Ser Thr Val Ser	
995 1000 1005	
acc aaa gac cat gtt gaa atg ttt aat tta aca acc cgg ggt tcc	12570
Thr Lys Asp His Val Glu Met Phe Asn Leu Thr Thr Arg Gly Ser	
1010 1015 1020	
gtt cga ttg cct agt cca cca aag caa ccg acg ggg ctt cca gct	12615
Val Arg Leu Pro Ser Pro Pro Lys Gln Pro Thr Gly Leu Pro Ala	
1025 1030 1035	
tac gtt cag gag gtc cag gat tcg ttt acc gta gaa cta cgc gcc	12660
Tyr Val Gln Glu Val Gln Asp Ser Phe Thr Val Glu Leu Arg Ala	
1040 1045 1050	
cgg gaa gaa gca tac aca aaa cta cta gtt act tat tgt aaa tcg	12705
Arg Glu Glu Ala Tyr Thr Lys Leu Leu Val Thr Tyr Cys Lys Ser	
1055 1060 1065	
att ata cgt tat ctc caa gga acg gcg aaa agg acg aca ata ggt	12750
Ile Ile Arg Tyr Leu Gln Gly Thr Ala Lys Arg Thr Thr Ile Gly	
1070 1075 1080	
ctt aat ata caa aac cct gac cag aaa gct tac acg caa ctc agg	12795
Leu Asn Ile Gln Asn Pro Asp Gln Lys Ala Tyr Thr Gln Leu Arg	
1085 1090 1095	
caa agt att cta ctt aga tat tat cgt gag gtg gca agt ttg gcg	12840
Gln Ser Ile Leu Leu Arg Tyr Tyr Arg Glu Val Ala Ser Leu Ala	
1100 1105 1110	



cgt ctt ctg tac cta cat tta tat tta acc gta acg cgt gaa ttt	12885
Arg Leu Leu Tyr Leu His Leu Tyr Leu Thr Val Thr Arg Glu Phe	
1115 1120 1125	
tcc tgg cgt ttg tac gcc agt caa tct gca cac ccg gac gtg ttt	12930
Ser Trp Arg Leu Tyr Ala Ser Gln Ser Ala His Pro Asp Val Phe	
1130 1135 1140	
gcg gct tta aaa ttc acc tgg acc gaa cgt cga cag ttc acg tgt	12975
Ala Ala Leu Lys Phe Thr Trp Thr Glu Arg Arg Gln Phe Thr Cys	
1145 1150 1155	
gcg ttt cat cct gta tta tgc aac cac ggc att gtg tta tta gaa	13020
Ala Phe His Pro Val Leu Cys Asn His Gly Ile Val Leu Leu Glu	
1160 1165 1170	
ggg aaa cca cta aca gcg tct gcc ttg agg gaa ata aat tac cgc	13065
Gly Lys Pro Leu Thr Ala Ser Ala Leu Arg Glu Ile Asn Tyr Arg	
1175 1180 1185	
cgc cga gaa ctg gga ctg cct cta gtt aga tgt ggt ctt gtt gaa	13110
Arg Arg Glu Leu Gly Leu Pro Leu Val Arg Cys Gly Leu Val Glu	
1190 1195 1200	
gaa aac aaa tct ccg ttg gtt caa caa ccc tca ttt tcg gtt cat	13155
Glu Asn Lys Ser Pro Leu Val Gln Gln Pro Ser Phe Ser Val His	
1205 1210 1215	
tta cca cgg tcg gtg ggt ttt ctt acc cac cac att aag cgt aag	13200
Leu Pro Arg Ser Val Gly Phe Leu Thr His His Ile Lys Arg Lys	
1220 1225 1230	
tta gac gca tat gcg gtc aaa cat cct caa gaa ccg aga cat gta	13245
Leu Asp Ala Tyr Ala Val Lys His Pro Gln Glu Pro Arg His Val	
1235 1240 1245	
cga gcg gat cat cct tac gca aaa gtt gtt gaa aat aga aac tac	13290
Arg Ala Asp His Pro Tyr Ala Lys Val Val Glu Asn Arg Asn Tyr	
1250 1255 1260	
ggt agt agc atc gaa gct atg att tta gca cct ccg tcc cca tcc	13335
Gly Ser Ser Ile Glu Ala Met Ile Leu Ala Pro Pro Ser Pro Ser	
1265 1270 1275	
gag atc ctg ccg ggg gac cca cca cgc cca ccc acg tgt ggg ttt	13380
Glu Ile Leu Pro Gly Asp Pro Pro Arg Pro Pro Thr Cys Gly Phe	
1280 1285 1290	
tta acg cgt taa acgtcattgg ggtagagggt gtaaataaat tacgaaaacg	13432
Leu Thr Arg	
1295	
tgcatgcgtt ttttattttt acaatgcgcc gtatatggta tgtctgtcat gtgctctaaa	13492
gtcccatata taaaagaagc cccaacgagt gtatgcgtat tgcgtaccgc gaccctggga	13552
tggttttacag gcgcgtttgt ttgtctcggt tataagt atg cag tcg ggt cat tat	13607
Met Gln Ser Gly His Tyr	
1300	



aac cgg agg	caa tcc cgc cga cag	cgg ata tcg tct aat	acc aca	13652
Asn Arg Arg	Gln Ser Arg Arg Gln	Arg Ile Ser Ser Asn	Thr Thr	
1305	1310	1315		
gac tcc ccc	cgt cac aca cac gga	aca cgt tat cgg tca	acc aat	13697
Asp Ser Pro	Arg His Thr His Gly	Thr Arg Tyr Arg Ser	Thr Asn	
1320	1325	1330		
tgg tat aca	cac cca ccc cag ata	ttg tcc aat tca gaa	aca tta	13742
Trp Tyr Thr	His Pro Pro Gln Ile	Leu Ser Asn Ser Glu	Thr Leu	
1335	1340	1345		
gtt gcg gtt	caa gaa cta ctg aac	tcc gag atg gat cag	gac agc	13787
Val Ala Val	Gln Glu Leu Leu Asn	Ser Glu Met Asp Gln	Asp Ser	
1350	1355	1360		
agt tct gac	gca tcg gat gat ttt	ccg gga tac gcc tta	cat cat	13832
Ser Ser Asp	Ala Ser Asp Asp Phe	Pro Gly Tyr Ala Leu	His His	
1365	1370	1375		
tct aca tat	aat gga tcc gaa caa	aat aca tca act tcc	aga cat	13877
Ser Thr Tyr	Asn Gly Ser Glu Gln	Asn Thr Ser Thr Ser	Arg His	
1380	1385	1390		
gaa aat cgc	ata ttt aaa tta acg	gag agg gaa gct aat	gag gaa	13922
Glu Asn Arg	Ile Phe Lys Leu Thr	Glu Arg Glu Ala Asn	Glu Glu	
1395	1400	1405		
atc aac atc	aat acg gac gcg atc	gac gac gag gga gag	gcg gag	13967
Ile Asn Ile	Asn Thr Asp Ala Ile	Asp Asp Glu Gly Glu	Ala Glu	
1410	1415	1420		
gag gga gag	gcg gag gag gac gcg	atc gac gac gag gga	gag gcg	14012
Glu Gly Glu	Ala Glu Glu Asp Ala	Ile Asp Asp Glu Gly	Glu Ala	
1425	1430	1435		
gag gag gga	gag gcg gag gag gac	gcg att gac gac gag	gga gag	14057
Glu Glu Gly	Glu Ala Glu Glu Asp	Ala Ile Asp Asp Glu	Gly Glu	
1440	1445	1450		
gcg gag gag	gga gag gcg gag gag	gac gcg att gac gac	gag gga	14102
Ala Glu Glu	Gly Glu Ala Glu Glu	Asp Ala Ile Asp Asp	Glu Gly	
1455	1460	1465		
gag gcg gag	gag gga gag gcg gag	gag gga gag gcg gag	gag gga	14147
Glu Ala Glu	Glu Gly Glu Ala Glu	Glu Gly Glu Ala Glu	Glu Gly	
1470	1475	1480		
gag gcg gag	gag gac gcg atc gac	gac gag gga gag gcg	gag gag	14192
Glu Ala Glu	Glu Asp Ala Ile Asp	Asp Glu Gly Glu Ala	Glu Glu	
1485	1490	1495		
gac gcg gcg	gag gag gac gcg atc	gac gac gag gga gag	gcg gag	14237
Asp Ala Ala	Glu Glu Asp Ala Ile	Asp Asp Glu Gly Glu	Ala Glu	
1500	1505	1510		
gag gat tat	ttt tct gta agt caa	gtt tgc agt cga gac	gcg gat	14282
Glu Asp Tyr	Phe Ser Val Ser Gln	Val Cys Ser Arg Asp	Ala Asp	
1515	1520	1525		



gag gtt tat	ttt acg tta gac	ccg gaa ata agt	tac agt acc gat	14327
Glu Val Tyr	Phe Thr Leu Asp	Pro Glu Ile Ser	Tyr Ser Thr Asp	
1530	1535	1540		
ctt cgc att	gca aag gtt atg	gag cct gcg gta	tca aag gaa ctt	14372
Leu Arg Ile	Ala Lys Val Met	Glu Pro Ala Val	Ser Lys Glu Leu	
1545	1550	1555		
aat gta tca	aaa cgt tgt gtt	gaa cct gtt acc	cta aca ggc tct	14417
Asn Val Ser	Lys Arg Cys Val	Glu Pro Val Thr	Leu Thr Gly Ser	
1560	1565	1570		
atg tta gcg	cat aat ggg ttt	gat gag tcc tgg	ttt gct atg cgc	14462
Met Leu Ala	His Asn Gly Phe	Asp Glu Ser Trp	Phe Ala Met Arg	
1575	1580	1585		
gaa tgt acc	cgt cgc gaa tat	att acg gtc caa	gga tta tac gac	14507
Glu Cys Thr	Arg Arg Glu Tyr	Ile Thr Val Gln	Gly Leu Tyr Asp	
1590	1595	1600		
cca att cat	tta cgg tat cag	ttt gat act tcc	cgg atg aca ccc	14552
Pro Ile His	Leu Arg Tyr Gln	Phe Asp Thr Ser	Arg Met Thr Pro	
1605	1610	1615		
cca cag att	ttg aga act ata	cca gcc ctt cct	aac atg aca ctt	14597
Pro Gln Ile	Leu Arg Thr Ile	Pro Ala Leu Pro	Asn Met Thr Leu	
1620	1625	1630		
ggg gaa ctt	tta ttg att ttt	cct att gaa ttt	atg gcc cag cca	14642
Gly Glu Leu	Leu Leu Ile Phe	Pro Ile Glu Phe	Met Ala Gln Pro	
1635	1640	1645		
att tct ata	gaa cgt att tta	gtt gaa gat gta	ttt tta gat agg	14687
Ile Ser Ile	Glu Arg Ile Leu	Val Glu Asp Val	Phe Leu Asp Arg	
1650	1655	1660		
cgg gct tcc	agt aaa aca cat	aaa tac ggc ccg	cgt tgg aat tcc	14732
Arg Ala Ser	Ser Lys Thr His	Lys Tyr Gly Pro	Arg Trp Asn Ser	
1665	1670	1675		
gtc tac gca	ctt cca tat aat	gcg ggt aaa atg	tat gta caa cac	14777
Val Tyr Ala	Leu Pro Tyr Asn	Ala Gly Lys Met	Tyr Val Gln His	
1680	1685	1690		
att cct ggg	ttt tat gac gtg	tcc tta cgt gct	gtg ggc caa gga	14822
Ile Pro Gly	Phe Tyr Asp Val	Ser Leu Arg Ala	Val Gly Gln Gly	
1695	1700	1705		
acg gcc att	tgg cat cac atg	ata tta tcc aca	gca gca tgc gct	14867
Thr Ala Ile	Trp His His Met	Ile Leu Ser Thr	Ala Ala Cys Ala	
1710	1715	1720		
att tct aat	cgc att tca cat	gga gat gga tta	gga ttt ttg tta	14912
Ile Ser Asn	Arg Ile Ser His	Gly Asp Gly Leu	Gly Phe Leu Leu	
1725	1730	1735		
gac gcg gca	att cgt att agc	gca aac tgt att	ttt ttg gga cgt	14957
Asp Ala Ala	Ile Arg Ile Ser	Ala Asn Cys Ile	Phe Leu Gly Arg	
1740	1745	1750		



aac gat aat ttt ggc gtg ggg gat cca tgt tgg tta gaa gac cat	15002
Asn Asp Asn Phe Gly Val Gly Asp Pro Cys Trp Leu Glu Asp His	
1755 1760 1765	
ctt gcc gga tta cca cga gaa gcc gta ccc gac gta ctc caa gtg	15047
Leu Ala Gly Leu Pro Arg Glu Ala Val Pro Asp Val Leu Gln Val	
1770 1775 1780	
aca cag ttg gtt ttg cca aat cgg ggt cca acg gtt gcc att atg	15092
Thr Gln Leu Val Leu Pro Asn Arg Gly Pro Thr Val Ala Ile Met	
1785 1790 1795	
cgt ggt ttt ttt ggg gcg ttg gca tat tgg ccc gaa cta aga att	15137
Arg Gly Phe Phe Gly Ala Leu Ala Tyr Trp Pro Glu Leu Arg Ile	
1800 1805 1810	
gct ata agt gaa cca tct aca tct ttg gtg cga tat gct acc ggt	15182
Ala Ile Ser Glu Pro Ser Thr Ser Leu Val Arg Tyr Ala Thr Gly	
1815 1820 1825	
cac atg gaa ctt gcc gaa tgg ttt tta ttt tca cgt aca cat agt	15227
His Met Glu Leu Ala Glu Trp Phe Leu Phe Ser Arg Thr His Ser	
1830 1835 1840	
tta aag cca caa ttt acc cca acg gaa cgg gaa atg tta gcg tca	15272
Leu Lys Pro Gln Phe Thr Pro Thr Glu Arg Glu Met Leu Ala Ser	
1845 1850 1855	
ttt ttt acg ttg tat gtt act ctt ggt gga gga atg ttg aac tgg	15317
Phe Phe Thr Leu Tyr Val Thr Leu Gly Gly Gly Met Leu Asn Trp	
1860 1865 1870	
atc tgt aga gca act gca atg tat tta gct gct cct tac cat tcc	15362
Ile Cys Arg Ala Thr Ala Met Tyr Leu Ala Ala Pro Tyr His Ser	
1875 1880 1885	
cgt tcg gct tac atc gcg gtc tgt gaa tct ctg ccc tat tac tat	15407
Arg Ser Ala Tyr Ile Ala Val Cys Glu Ser Leu Pro Tyr Tyr Tyr	
1890 1895 1900	
atc ccg gtt aat agt gac ctg tta tgt gat tta gag gta tta ctg	15452
Ile Pro Val Asn Ser Asp Leu Leu Cys Asp Leu Glu Val Leu Leu	
1905 1910 1915	
tta ggc gag gtc gac ctc cca act gtt tgt gaa tcc tac gca act	15497
Leu Gly Glu Val Asp Leu Pro Thr Val Cys Glu Ser Tyr Ala Thr	
1920 1925 1930	
att gca cac gaa tta acc gga tat gag gct gtt cgc aca gca gcc	15542
Ile Ala His Glu Leu Thr Gly Tyr Glu Ala Val Arg Thr Ala Ala	
1935 1940 1945	
aca aat ttt atg ata gag ttt gcc gat tgt tat aag gaa agt gag	15587
Thr Asn Phe Met Ile Glu Phe Ala Asp Cys Tyr Lys Glu Ser Glu	
1950 1955 1960	
acc gat tta atg gta agc gcg tac ctg ggg gcc gtt tta ttg tta	15632
Thr Asp Leu Met Val Ser Ala Tyr Leu Gly Ala Val Leu Leu Leu	
1965 1970 1975	



caa cgg gtg	ttg ggt cat gca aat	ctt ctt ttg ttg ctt	ctc tcc	15677
Gln Arg Val	Leu Gly His Ala Asn	Leu Leu Leu Leu Leu	Leu Ser	
1980	1985	1990		
ggt gct gcg	ttg tac gga gga tgt	tca att tac atc ccc	cga ggt	15722
Gly Ala Ala	Leu Tyr Gly Gly Cys	Ser Ile Tyr Ile Pro	Arg Gly	
1995	2000	2005		
att tta gat	gca tat aat act tta	atg ttg gca gca agt	cct ctt	15767
Ile Leu Asp	Ala Tyr Asn Thr Leu	Met Leu Ala Ala Ser	Pro Leu	
2010	2015	2020		
tac gct cac	caa act tta aca tcc	ttt tgg aaa gac cgc	gat gat	15812
Tyr Ala His	Gln Thr Leu Thr Ser	Phe Trp Lys Asp Arg	Asp Asp	
2025	2030	2035		
gca atg caa	act ttg ggg att cga	ccg aca acg gac gtt	tta ccc	15857
Ala Met Gln	Thr Leu Gly Ile Arg	Pro Thr Thr Asp Val	Leu Pro	
2040	2045	2050		
aaa gag caa	gac agg ata gtt cag	gca tca cct ata gag	atg aac	15902
Lys Glu Gln	Asp Arg Ile Val Gln	Ala Ser Pro Ile Glu	Met Asn	
2055	2060	2065		
ttc cgt ttt	gtg gga ttg gag acc	atc tat ccc cga gaa	cag ccc	15947
Phe Arg Phe	Val Gly Leu Glu Thr	Ile Tyr Pro Arg Glu	Gln Pro	
2070	2075	2080		
att ccc tcc	gtg gac cta gcc gaa	aat ctt atg caa tac	agg aat	15992
Ile Pro Ser	Val Asp Leu Ala Glu	Asn Leu Met Gln Tyr	Arg Asn	
2085	2090	2095		
gaa att ctg	ggt ttg gat tgg aaa	agc gta gcc atg cat	tta cta	16037
Glu Ile Leu	Gly Leu Asp Trp Lys	Ser Val Ala Met His	Leu Leu	
2100	2105	2110		
cga aaa tat	taa gggttgtgat ttttttcatt	aggatgaaaa gaacgtttcc		16089
Arg Lys Tyr	2115			
tagccacacc	cacaaaggag tttgtaaaat	aaaatctctg tttagacctt	aaaatttggt	16149
gtgtgtgttg	tgtgggggggt ccgtgaggat	cgacctttac aagatataat	ttgtccatat	16209
cgca atg ttt	tct cgg ttt gcg cgt	tcc ttt tcc agc	gat gat aga	16255
Met Phe Ser	Arg Phe Ala Arg	Ser Phe Ser Ser	Asp Asp Arg	
	2120	2125		
acg cgt aaa	tct tat gat ggt agt	tac caa agt ttt	aat gcc ggc	16300
Thr Arg Lys	Ser Tyr Asp Gly	Ser Tyr Gln Ser	Phe Asn Ala Gly	
2130	2135	2140		
gaa cgt gat	ttg ccc aca cct acc	cgg gac tgg tgt	tct att tcc	16345
Glu Arg Asp	Leu Pro Thr Pro	Thr Arg Asp Trp	Cys Ser Ile Ser	
2145	2150	2155		
caa cgc ata	acc agc gag cgc	gtg agg gat gga	tgt ctt att cca	16390
Gln Arg Ile	Thr Ser Glu Arg	Val Arg Asp Gly	Cys Leu Ile Pro	
2160	2165	2170		



acg Thr 2175	ccc Pro	ggc Gly	gag Glu	gct Ala	ttg Leu 2180	gag Glu	acg Thr	gcg Ala	gta Val	aag Lys 2185	gct Ala	tta Leu	tct Ser	gaa Glu	16435
aag Lys 2190	acc Thr	gac Asp	agc Ser	cta Leu	aca Thr 2195	tcg Ser	ccg Pro	gtt Val	tta Leu	caa Gln 2200	agt Ser	acc Thr	gaa Glu	aga Arg	16480
cac His 2205	agt Ser	gtt Val	ctg Leu	ctt Leu	gga Gly 2210	tta Leu	cac His	cat His	aat Asn	aat Asn 2215	gtt Val	cct Pro	gaa Glu	tcg Ser	16525
ttg Leu 2220	gtg Val	gtc Val	tcg Ser	tgt Cys	atg Met 2225	tct Ser	aac Asn	gat Asp	gtt Val	cat His 2230	gac Asp	ggg Gly	ttt Phe	atg Met	16570
cag Gln 2235	cgt Arg	tat Tyr	atg Met	gaa Glu	aca Thr 2240	att Ile	caa Gln	aga Arg	tgt Cys	ttg Leu 2245	gat Asp	gac Asp	ctg Leu	aaa Lys	16615
ctt Leu 2250	tct Ser	ggg Gly	gat Asp	gga Gly	ctt Leu 2255	tgg Trp	tgg Trp	gtt Val	tat Tyr	gaa Glu 2260	aat Asn	aca Thr	tat Tyr	tgg Trp	16660
cag Gln 2265	tat Tyr	ctc Leu	aaa Lys	tac Tyr	acc Thr 2270	aca Thr	gga Gly	gcc Ala	gag Glu	gta Val 2275	ccg Pro	gtg Val	act Thr	tca Ser	16705
gag Glu 2280	aag Lys	gta Val	aat Asn	aaa Lys	aag Lys 2285	tct Ser	aaa Lys	tcc Ser	acg Thr	gtt Val 2290	ttg Leu	ttg Leu	ttt Phe	tca Ser	16750
tcc Ser 2295	gta Val	gtt Val	gcc Ala	aat Asn	aaa Lys 2300	cca Pro	ata Ile	tcc Ser	aga Arg	cat His 2305	cct Pro	ttt Phe	aaa Lys	tct Ser	16795
aaa Lys 2310	gtt Val	ata Ile	aat Asn	tcg Ser	gat Asp 2315	tac Tyr	cgg Arg	gga Gly	ata Ile	tgt Cys 2320	cag Gln	gag Glu	cta Leu	cgt Arg	16840
gag Glu 2325	gcg Ala	tta Leu	gga Gly	gct Ala	gtg Val 2330	caa Gln	aag Lys	tat Tyr	atg Met	tat Tyr 2335	ttt Phe	atg Met	cgt Arg	cca Pro	16885
gat Asp 2340	gat Asp	cct Pro	aca Thr	aac Asn	ccc Pro 2345	agc Ser	ccg Pro	gat Asp	aca Thr	aga Arg 2350	ata Ile	cgt Arg	gta Val	caa Gln	16930
gaa Glu 2355	att Ile	gcg Ala	gct Ala	tac Tyr	acg Thr 2360	gct Ala	act Thr	ggc Gly	tac Tyr	ggg Gly 2365	tgg Trp	atg Met	tta Leu	tgg Trp	16975
ttc Phe 2370	ttg Leu	gac Asp	gtt Val	gtg Val	gac Asp 2375	gcc Ala	agg Arg	gta Val	tgt Cys	cgc Arg 2380	cat His	ctc Leu	aaa Lys	ctt Leu	17020
caa Gln 2385	ttt Phe	cga Arg	cgg Arg	att Ile	cga Arg 2390	ggg Gly	ccg Pro	cgc Arg	gcg Ala	tct Ser 2395	gtt Val	att Ile	cca Pro	gat Asp	17065



gat Asp 2400	ttg Leu	ctt Leu	aga Arg	cga Arg	cat His 2405	tta Leu	aaa Lys	acg Thr	ggg Gly	cct Pro 2410	gcg Ala	gtc Val	tca Ser	gcg Ala	17110
ggc Gly 2415	aca Thr	gga Gly	gtt Val	gcg Ala	ttt Phe 2420	att Ile	tta Leu	gca Ala	gca Ala	aca Thr 2425	act Thr	gcc Ala	agc Ser	gct Ala	17155
ctt Leu 2430	act Thr	gcg Ala	ctt Leu	ttg Leu	cgt Arg 2435	att Ile	agt Ser	gta Val	tta Leu	tgg Trp 2440	cga Arg	aag Lys	gaa Glu	gag Glu	17200
tgg Trp 2445	cgg Arg	gat Asp	ggg Gly	tta Leu	aat Asn 2450	gga Gly	acc Thr	gca Ala	gct Ala	gca Ala 2455	att Ile	gtt Val	gcg Ala	gcg Ala	17245
gtt Val 2460	gaa Glu	ctt Leu	att Ile	acg Thr	ctt Leu 2465	ttg Leu	cac His	cac His	cat His	ttt Phe 2470	caa Gln	tac Tyr	tta Leu	att Ile	17290
aat Asn 2475	atg Met	atg Met	ctt Leu	att Ile	gga Gly 2480	tat Tyr	gca Ala	tgt Cys	tgg Trp	ggg Gly 2485	gat Asp	ggg Gly	gga Gly	tta Leu	17335
aac Asn 2490	gat Asp	cct Pro	tat Tyr	ata Ile	tta Leu 2495	aag Lys	gcg Ala	cta Leu	cgt Arg	gcc Ala 2500	cag Gln	gga Gly	cgg Arg	ttt Phe	17380
tta Leu 2505	tat Tyr	ttt Phe	gcg Ala	ggg Gly	cag Gln 2510	ttg Leu	gtc Val	aga Arg	aca Thr	atg Met 2515	tca Ser	aca Thr	cac His	agt Ser	17425
tgg Trp 2520	gtt Val	gtg Val	tta Leu	gag Glu	acc Thr 2525	agc Ser	acc Thr	cat His	atg Met	tgg Trp 2530	ttt Phe	tcc Ser	cgg Arg	gcc Ala	17470
gtg Val 2535	gcg Ala	cag Gln	agt Ser	att Ile	tta Leu 2540	gca Ala	cat His	ggg Gly	ggg Gly	aaa Lys 2545	ccc Pro	aca Thr	aag Lys	tat Tyr	17515
tat Tyr 2550	gct Ala	cag Gln	gtt Val	ctt Leu	gcc Ala 2555	gcc Ala	agt Ser	aaa Lys	cgg Arg	tat Tyr 2560	act Thr	ccg Pro	tta Leu	cat His	17560
tta Leu 2565	aga Arg	cgt Arg	ata Ile	tcc Ser	gaa Glu 2570	cca Pro	tcc Ser	agt Ser	gtg Val	tct Ser 2575	gat Asp	cag Gln	ccg Pro	tat Tyr	17605
att Ile 2580	cgt Arg	ttt Phe	aat Asn	cga Arg	ctg Leu 2585	gga Gly	tct Ser	cca Pro	ata Ile	ggg Gly 2590	aca Thr	ggg Gly	ata Ile	ggg Gly	17650
aat Asn 2595	ttg Leu	gaa Glu	tgt Cys	gtc Val	tgt Cys 2600	tta Leu	acg Thr	gga Gly	aat Asn	tat Tyr 2605	tta Leu	tct Ser	gac Asp	gac Asp	17695
gta Val 2610	aat Asn	gca Ala	agt Ser	tcc Ser	cat His 2615	gta Val	att Ile	aat Asn	aca Thr	gaa Glu 2620	gca Ala	ccg Pro	tta Leu	aac Asn	17740



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Arg	His	Ile	Glu	Thr	Gln	Ala	Ser	Leu	Asn	Asp	His	Val	Tyr	Glu	
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His	His														
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Asp	Asp	Ile	Leu	Arg	Tyr	Gly	Val	Arg	Lys	Arg	Asp	Arg	Thr	Gly	



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Ile Gly Thr Leu	Ser Leu Phe Gly	Met Gln Ala Arg Tyr	Asn Leu									
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Arg Asn Glu Phe	Pro Leu Leu Thr	Thr Lys Arg Val Phe	Trp Arg									
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Ala Val Val Glu	Glu Leu Leu Trp	Phe Ile Arg Gly Ser	Thr Asp									
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Ser Lys Glu Leu	Ala Ala Lys Asp	Ile His Ile Trp Asp	Ile Tyr									
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Pro Leu Met Val	Leu Pro Pro Cys	His Thr Leu Cys Gln	Phe Tyr									
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Asp Ala Leu Lys	Val Gln Leu Ala	Arg Ser Pro Lys Pro	Phe Pro									



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Cys Leu Lys Ile Ile Arg Asn Val	Thr Asp Ile Asn Asp Phe Lys		
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Lys Met Glu Met Ala Leu			
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Arg Phe Ile His Glu His Lys Leu Val Lys Pro Ser Ile Ile Ser
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Lys	Leu	Met	Lys	Arg	Val	Asn	Ile	Met	Gln	Asn	Thr	Ala	Asp	Pro	
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Tyr	Met	Val	Ile	Asn	Thr	Leu	Tyr	His	Asn	Leu	Lys	Gly	Glu	Lys	
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Met	Ala	Arg	Gln	Tyr	Ala	Arg	Ile	Phe	Lys	Gln	Phe	Ile	Pro	Thr	
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Pro	Leu	Pro	Leu	Asn	Thr	Val	Leu	Thr	Lys	Tyr	Trp	Asn			
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		Met Glu Glu	Pro Ile Cys Tyr Asp	Thr		
		3535		3540		
caa aaa ctt ttg	gat gat tta agt	aac	ttg aaa gta caa gaa	gcg		30830
Gln Lys Leu Leu	Asp Asp Leu Ser	Asn	Leu Lys Val Gln Glu	Ala		
	3545	3550		3555		
gac aac gaa aga	cca tgg tca cca gag	aaa aca gaa atc gcc	aga			30875
Asp Asn Glu Arg	Pro Trp Ser Pro Glu	Lys Thr Glu Ile Ala	Arg			



3560				3565				3570				
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Val Lys Val Val	Lys Phe Leu Arg	Ser Thr Gln Lys Ile	Pro Ala									
3575		3580	3585									
aaa cat ttt att	cag ata tgg gaa	ccc ctg cat tct aat	atc tgt	30965								
Lys His Phe Ile	Gln Ile Trp Glu	Pro Leu His Ser Asn	Ile Cys									
3590		3595	3600									
ttt gta tat tcc	aat aca ttt ttg	gcg gag gct gct ttc	acg gcc	31010								
Phe Val Tyr Ser	Asn Thr Phe Leu	Ala Glu Ala Ala Phe	Thr Ala									
3605		3610	3615									
gaa aat tta ccc	gga ctg ttg ttt	tgg aga cta gat cta	gac tgg	31055								
Glu Asn Leu Pro	Gly Leu Leu Phe	Trp Arg Leu Asp Leu	Asp Trp									
3620		3625	3630									
acg ata gag gag	cca ggt aat agc	tta aaa att tta acc	cag cta	31100								
Thr Ile Glu Glu	Pro Gly Asn Ser	Leu Lys Ile Leu Thr	Gln Leu									
3635		3640	3645									
tca agt gta gta	caa gat tcc gag	acg tta cat cgt tta	tcg gcc	31145								
Ser Ser Val Val	Gln Asp Ser Glu	Thr Leu His Arg Leu	Ser Ala									
3650		3655	3660									
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Asn Lys Leu Arg	Thr Ser Ser Lys	Phe Gly Pro Val Ser	Ile His									
3665		3670	3675									
ttc att ata acg	gac tgg ata aat	atg tac gag gtc gcc	tta aag	31235								
Phe Ile Ile Thr	Asp Trp Ile Asn	Met Tyr Glu Val Ala	Leu Lys									
3680		3685	3690									
gat gca aca aca	gcc att gaa tca	cca ttc act cac gct	cgt att	31280								
Asp Ala Thr Thr	Ala Ile Glu Ser	Pro Phe Thr His Ala	Arg Ile									
3695		3700	3705									
gga atg ttg gaa	agc gcc att gca	gct tta aca caa cat	aaa ttt	31325								
Gly Met Leu Glu	Ser Ala Ile Ala	Ala Leu Thr Gln His	Lys Phe									
3710		3715	3720									
gcg atc att tac	gat atg cca ttt	gtt caa gag ggg att	cgt gtt	31370								
Ala Ile Ile Tyr	Asp Met Pro Phe	Val Gln Glu Gly Ile	Arg Val									
3725		3730	3735									
tta aca caa tat	gca gga tgg ctt	ctt ccg ttt aat gtt	atg tgg	31415								
Leu Thr Gln Tyr	Ala Gly Trp Leu	Leu Pro Phe Asn Val	Met Trp									
3740		3745	3750									
aat cag att caa	aat agc tca ctc	act cct cta aca cga	gcc ctt	31460								
Asn Gln Ile Gln	Asn Ser Ser Leu	Thr Pro Leu Thr Arg	Ala Leu									
3755		3760	3765									
ttt ata atc tgt	atg att gat gaa	tat ctc acg gaa acg	cca gta	31505								
Phe Ile Ile Cys	Met Ile Asp Glu	Tyr Leu Thr Glu Thr	Pro Val									
3770		3775	3780									
cat agc ata tca	gaa tta ttt gca	gat act gta aat tta	att aaa	31550								
His Ser Ile Ser	Glu Leu Phe Ala	Asp Thr Val Asn Leu	Ile Lys									



3785				3790				3795							
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Asp	Glu	Ala	Phe	Val	Ser	Ile	Glu	Glu	Ala	Val	Thr	Asn	Pro	Arg	
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Thr	Val	His	Glu	Ser	Arg	Ile	Ser	Ser	Ala	Leu	Ala	Tyr	Arg	Asp	
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cct	tat	gtt	ttt	gag	aca	tcc	ccg	gga	atg	ctt	gct	agg	aga	ctt	31685
Pro	Tyr	Val	Phe	Glu	Thr	Ser	Pro	Gly	Met	Leu	Ala	Arg	Arg	Leu	
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Arg	Leu	Asp	Asn	Gly	Ile	Trp	Glu	Ser	Asn	Leu	Leu	Ser	Leu	Ser	
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Asp	Pro	Glu	Ala	Glu	Thr	Thr	Ser	Gly	Ser	Asn	Val	Ala	Glu	His	
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Met	Leu	Ile	Ser	Thr	Leu	Ala	Glu	Ser	Gly	Phe	Thr	Arg	Phe	Ser	
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Cys	Lys	Leu	Leu	Arg	Arg	Phe	Ile	Ala	His	His	Thr	Leu	Ala	Gly	
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Phe	Ile	His	Gly	Ser	Val	Val	Ala	Asp	Glu	His	Ile	Thr	Asp	Phe	
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Tyr	Thr	Arg	Thr	Val	Asn	Glu	Thr	Glu	Lys	Arg	Tyr	Glu	Thr	Leu	
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Arg	Arg	Cys	Phe	Ala	Pro	Arg	Pro	Leu	Ile	Glu	Ser	Ile	Gln	Ala	



4010				4015				4020				
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Thr Arg Val	Ile Leu Leu	Asn Glu Ile	Ser His Ala	Glu Ala Arg								
	4025		4030	4035								
gag aca aca	tat ttt aag	caa aca cat	aat caa tcc	tca ggt gcg	32315							
Glu Thr Thr	Tyr Phe Lys	Gln Thr His	Asn Gln Ser	Ser Gly Ala								
	4040		4045	4050								
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Leu Leu Pro	Gln Ala Gly	Gln Ser Ala	Val Arg Glu	Ala Val Leu								
	4055		4060	4065								
acc tgg ttt	gac cta cgt	atg gat tca	aga tgg ggt	att act ccc	32405							
Thr Trp Phe	Asp Leu Arg	Met Asp Ser	Arg Trp Gly	Ile Thr Pro								
	4070		4075	4080								
ccg gtg gat	gtg ggt atg	aca cct cct	att tgt gtt	gat cca ccg	32450							
Pro Val Asp	Val Gly Met	Thr Pro Pro	Ile Cys Val	Asp Pro Pro								
	4085		4090	4095								
gct aca ggg	ttg gaa gct	gtc atg ata	aca gaa gca	cta aag att	32495							
Ala Thr Gly	Leu Glu Ala	Val Met Ile	Thr Glu Ala	Leu Lys Ile								
	4100		4105	4110								
gca tat cct	acc gaa tat	aat cgc tct	agc gtg ttt	gtg gaa ccg	32540							
Ala Tyr Pro	Thr Glu Tyr	Asn Arg Ser	Ser Val Phe	Val Glu Pro								
	4115		4120	4125								
tcg ttt gtg	cct tat att	att gca aca	agc acg ctt	gat gcc ctt	32585							
Ser Phe Val	Pro Tyr Ile	Ile Ala Thr	Ser Thr Leu	Asp Ala Leu								
	4130		4135	4140								
tcg gca aca	ata gct ttg	tct ttt gat	aca cgg gga	ata cag caa	32630							
Ser Ala Thr	Ile Ala Leu	Ser Phe Asp	Thr Arg Gly	Ile Gln Gln								
	4145		4150	4155								
gcc ttg tct	att ctt cag	tgg gct cgc	gat tat gga	tcc gga acc	32675							
Ala Leu Ser	Ile Leu Gln	Trp Ala Arg	Asp Tyr Gly	Ser Gly Thr								
	4160		4165	4170								
gtg ccc aat	gca gat gga	tat cgc aca	aaa cta tct	gct ctt ata	32720							
Val Pro Asn	Ala Asp Gly	Tyr Arg Thr	Lys Leu Ser	Ala Leu Ile								
	4175		4180	4185								
aca ata tta	gaa cct ttt	acc cgt aca	cac ccc cca	gta ctt tta	32765							
Thr Ile Leu	Glu Pro Phe	Thr Arg Thr	His Pro Pro	Val Leu Leu								
	4190		4195	4200								
cca tct cac	gtt tct act	ata gat tcc	ctt ata tgc	gaa ctt cat	32810							
Pro Ser His	Val Ser Thr	Ile Asp Ser	Leu Ile Cys	Glu Leu His								
	4205		4210	4215								
cgg act gtt	ggc att gcc	gtt gac ctg	ctt ccc cag	cac gtc cgt	32855							
Arg Thr Val	Gly Ile Ala	Val Asp Leu	Leu Pro Gln	His Val Arg								
	4220		4225	4230								
cct ttg gtt	cct gac cgt	cct tct att	aca aat agc	gtt ttt tta	32900							
Pro Leu Val	Pro Asp Arg	Pro Ser Ile	Thr Asn Ser	Val Phe Leu								



4235				4240				4245				
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Ala Thr Leu Tyr	Tyr Asp Glu Leu Tyr	Gly Arg Trp Thr Arg	Leu									
4250	4255	4260										
gat aaa aca tcg	cag gcg ttg gtt	gaa aat ttt aca tcc	aac gcg	32990								
Asp Lys Thr Ser	Gln Ala Leu Val Glu	Asn Phe Thr Ser Asn	Ala									
4265	4270	4275										
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Leu Val Val Ser	Arg Tyr Met Leu Met	Leu Gln Lys Phe Phe	Ala									
4280	4285	4290										
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Cys Arg Phe Tyr	Pro Thr Pro Asp Leu	Gln Ala Val Gly Ile	Cys									
4295	4300	4305										
aac cca aag gtt	gaa cgc gat gaa caa	ttt ggg gta tgg cgt	tta	33125								
Asn Pro Lys Val	Glu Arg Asp Glu Gln	Phe Gly Val Trp Arg	Leu									
4310	4315	4320										
aac gat ctt gct	gat gcg gtt ggt cat	att gtt ggg aca ata	caa	33170								
Asn Asp Leu Ala	Asp Ala Val Gly His	Ile Val Gly Thr Ile	Gln									
4325	4330	4335										
gga atc cga acg	caa atg aga gtg gga	ata tcc agc ctg cgc	aca	33215								
Gly Ile Arg Thr	Gln Met Arg Val Gly	Ile Ser Ser Leu Arg	Thr									
4340	4345	4350										
att atg gcc gat	gct tcc tca gcc ctt	agg gaa tgt gaa aat	tta	33260								
Ile Met Ala Asp	Ala Ser Ser Ala Leu	Arg Glu Cys Glu Asn	Leu									
4355	4360	4365										
atg act aaa acc	tcc act tct gct att	ggg cct ctt ttt tca	acg	33305								
Met Thr Lys Thr	Ser Thr Ser Ala Ile	Gly Pro Leu Phe Ser	Thr									
4370	4375	4380										
atg gct tcc cgg	tat gca cgg ttt aca	cag gat caa atg gac	att	33350								
Met Ala Ser Arg	Tyr Ala Arg Phe Thr	Gln Asp Gln Met Asp	Ile									
4385	4390	4395										
tta atg cgt gtt	gac aaa cta aca aca	gga gaa aat ata ccc	ggc	33395								
Leu Met Arg Val	Asp Lys Leu Thr Thr	Gly Glu Asn Ile Pro	Gly									
4400	4405	4410										
ctt gca aat gta	gag att ttt tta aat	agg tgg gaa cga ata	gca	33440								
Leu Ala Asn Val	Glu Ile Phe Leu Asn	Arg Trp Glu Arg Ile	Ala									
4415	4420	4425										
aca gct tgt agg	cat gcc acg gca gtc	ccg tcg gcc gaa tct	att	33485								
Thr Ala Cys Arg	His Ala Thr Ala Val	Pro Ser Ala Glu Ser	Ile									
4430	4435	4440										
gca acc gtg tgt	aat gaa ttg agg cgc	ggc tta aaa aat ata	caa	33530								
Ala Thr Val Cys	Asn Glu Leu Arg Arg	Gly Leu Lys Asn Ile	Gln									
4445	4450	4455										
gag gat cgt gta	aat gcc cca acc tca	tat atg agt cac gcc	cga	33575								
Glu Asp Arg Val	Asn Ala Pro Thr Ser	Tyr Met Ser His Ala	Arg									



4460	4465	4470	
aat ctg gaa gat	cac aag gca gca gtt	tca ttc gtt atg gac tcc	33620
Asn Leu Glu Asp	His Lys Ala Ala Val	Ser Phe Val Met Asp Ser	
4475	4480	4485	
agg caa cag ttt	att gtg gat tct gga	cct cag atg ggc gcg gtt	33665
Arg Gln Gln Phe	Ile Val Asp Ser Gly	Pro Gln Met Gly Ala Val	
4490	4495	4500	
tta act tca caa	tgt aat ata gga aca	tgg gag aat gta aat gca	33710
Leu Thr Ser Gln	Cys Asn Ile Gly Thr	Trp Glu Asn Val Asn Ala	
4505	4510	4515	
acg ttt tta cat	gat aat gtt aaa ata	acg aca acg gtc aga gac	33755
Thr Phe Leu His	Asp Asn Val Lys Ile	Thr Thr Thr Val Arg Asp	
4520	4525	4530	
gta att tca gag	gct ccg acg ctg ata	ata gga caa aga tgg ctt	33800
Val Ile Ser Glu	Ala Pro Thr Leu Ile	Ile Gly Gln Arg Trp Leu	
4535	4540	4545	
cgt cca gat gag	att tta tct aat gta	gat ttg cgt ctt ggc gta	33845
Arg Pro Asp Glu	Ile Leu Ser Asn Val	Asp Leu Arg Leu Gly Val	
4550	4555	4560	
ccc ggg aat aca	agt ggg agt gac cct	taa tataaaacag gcgtgtttat	33895
Pro Gly Asn Thr	Ser Gly Ser Asp Pro		
4565	4570		
gtacattaaa gtatttgtgg	tttttattga ctgggcgttt	cgtttgtata acgctgttgt	33955
tgctagtatt ttcataacct	cctaggtttt tggagctaca	cgtagcttatt caacgctctt	34015
tgggatttga atcatcgtaa	acgtagcgctc cctaccagtt	gagcgcgtaa ttttcgtaag	34075
caataaaa atg gat ata	att ccg cct ata gct gtc	act gtt gcg gga gtg	34124
Met Asp Ile Ile	Pro Pro Ile Ala Val	Thr Val Ala Gly Val	
	4575	4580	
gga agc cgt aat caa	ttt gac ggt gcc ctg gga	ccg gcg tca ggt	34169
Gly Ser Arg Asn Gln	Phe Asp Gly Ala Leu Gly	Pro Ala Ser Gly	
4585	4590	4595	
ctg tca tgt tta aga	aca tct tta tcg ttt ttg	cat atg aca tat	34214
Leu Ser Cys Leu Arg	Thr Ser Leu Ser Phe Leu	His Met Thr Tyr	
4600	4605	4610	
gcg cat gga att aat	gca acc ctg tca tca gac	atg att gat gga	34259
Ala His Gly Ile Asn	Ala Thr Leu Ser Ser Asp	Met Ile Asp Gly	
4615	4620	4625	
tgt tta caa gag ggt	gca gca tgg act acg gat	ctg tct aat atg	34304
Cys Leu Gln Glu Gly	Ala Ala Trp Thr Thr Asp	Leu Ser Asn Met	
4630	4635	4640	
ggg agg ggt gtc cca	gat atg tgt gct ctt gtt	gat ctc ccc aat	34349
Gly Arg Gly Val Pro	Asp Met Cys Ala Leu Val	Asp Leu Pro Asn	
4645	4650	4655	



cga Arg 4660	att Ile	tca Ser	tat Tyr	att Ile	aaa Lys 4665	ctg Leu	ggg Gly	gac Asp	act Thr	acc Thr 4670	agt Ser	acg Thr	tgc Cys	tgc Cys	34394
gtt Val 4675	ttg Leu	tct Ser	aga Arg	ata Ile	tac Tyr 4680	ggc Gly	gat Asp	agc Ser	cat His	ttt Phe 4685	ttt Phe	acc Thr	gtt Val	cca Pro	34439
gac Asp 4690	gag Glu	ggt Gly	ttt Phe	atg Met	tgc Cys 4695	aca Thr	caa Gln	att Ile	ccc Pro	gct Ala 4700	aga Arg	gcg Ala	ttt Phe	ttc Phe	34484
gat Asp 4705	gat Asp	gtg Val	tgg Trp	atg Met	gga Gly 4710	cgt Arg	gaa Glu	gag Glu	tcg Ser	tat Tyr 4715	aca Thr	att Ile	ata Ile	act Thr	34529
gta Val 4720	gac Asp	tca Ser	acg Thr	gga Gly	atg Met 4725	gcc Ala	atc Ile	tat Tyr	cgt Arg	cag Gln 4730	gga Gly	aac Asn	ata Ile	tct Ser	34574
ttt Phe 4735	att Ile	ttt Phe	gat Asp	cca Pro	cat His 4740	ggc Gly	cat His	ggg Gly	act Thr	ata Ile 4745	gga Gly	cag Gln	gct Ala	gta Val	34619
gtt Val 4750	gtt Val	cgg Arg	gtg Val	aat Asn	acc Thr 4755	acg Thr	gat Asp	gtg Val	tac Tyr	tct Ser 4760	tat Tyr	atc Ile	gca Ala	tcg Ser	34664
gag Glu 4765	tat Tyr	acc Thr	cac His	cgc Arg	ccc Pro 4770	gat Asp	aac Asn	gta Val	gaa Glu	tcc Ser 4775	caa Gln	tgg Trp	gcc Ala	gct Ala	34709
gca Ala 4780	tta Leu	gtt Val	ttt Phe	ttt Phe	gtc Val 4785	acc Thr	gca Ala	aac Asn	gac Asp	ggg Gly 4790	ccc Pro	gta Val	agc Ser	gaa Glu	34754
gaa Glu 4795	gcg Ala	cta Leu	tct Ser	tcg Ser	gca Ala 4800	gta Val	acg Thr	ctt Leu	ata Ile	tac Tyr 4805	gga Gly	agc Ser	tgt Cys	gat Asp	34799
aca Thr 4810	tat Tyr	ttt Phe	aca Thr	gat Asp	gaa Glu 4815	caa Gln	tat Tyr	tgc Cys	gaa Glu	aaa Lys 4820	ctg Leu	gtt Val	aca Thr	gct Ala	34844
caa Gln 4825	cat His	ccg Pro	ttg Leu	ctt Leu	ctt Leu 4830	tca Ser	cct Pro	cct Pro	aat Asn	tcc Ser 4835	acg Thr	aca Thr	att Ile	gtg Val	34889
ctt Leu 4840	aat Asn	aaa Lys	tcg Ser	tct Ser	ata Ile 4845	gta Val	cct Pro	ctt Leu	cac His	caa Gln 4850	aac Asn	gtt Val	ggg Gly	gaa Glu	34934
agt Ser 4855	gta Val	tcc Ser	ttg Leu	gaa Glu	gca Ala 4860	acc Thr	cta Leu	cat His	tca Ser	acg Thr 4865	tta Leu	acc Thr	aac Asn	acg Thr	34979
gtt Val 4870	gca Ala	ctg Leu	gac Asp	cct Pro	aga Arg 4875	tgt Cys	agt Ser	tac Tyr	agc Ser	gag Glu 4880	gtt Val	gat Asp	cct Pro	tgg Trp	35024



cat His 4885	gcg Ala	gtt Val	cta Leu	gaa Glu	aca Thr	acc Thr	tcg Ser	act Thr	ggg Gly	tct Ser	ggc Gly	gtt Val	ttg Leu	gat Asp	35069
					4890					4895					
tgt Cys 4900	cgt Arg	cgt Arg	aga Arg	cgc Arg	cgt Arg	cct Pro	tca Ser	tgg Trp	act Thr	cct Pro	cct Pro	tca Ser	agc Ser	gag Glu	35114
					4905					4910					
gaa Glu 4915	aat Asn	tta Leu	gct Ala	tgt Cys	atc Ile	gac Asp	gat Asp	ggc Gly	ttg Leu	gta Val	aat Asn	aat Asn	aca Thr	cat His	35159
					4920					4925					
tcc Ser 4930	acg Thr	gat Asp	aat Asn	tta Leu	cat His	aaa Lys	ccc Pro	gct Ala	aaa Lys	aag Lys	gtt Val	ctc Leu	aaa Lys	ttt Phe	35204
					4935					4940					
aaa Lys 4945	cca Pro	act Thr	gta Val	gac Asp	gtg Val	ccg Pro	gat Asp	aaa Lys	aca Thr	caa Gln	gtg Val	gca Ala	cat His	gta Val	35249
					4950					4955					
tta Leu 4960	ccc Pro	cgc Arg	cta Leu	cga Arg	gaa Glu	gtt Val	gct Ala	aac Asn	acc Thr	cca Pro	gac Asp	gtt Val	gtg Val	tta Leu	35294
					4965					4970					
aat Asn 4975	gta Val	tcc Ser	aat Asn	gta Val	gat Asp	acg Thr	cct Pro	gaa Glu	tcc Ser	agt Ser	ccc Pro	act Thr	ttt Phe	tca Ser	35339
					4980					4985					
cgg Arg 4990	aac Asn	atg Met	aat Asn	gta Val	gga Gly	agc Ser	agt Ser	ttg Leu	aaa Lys	gat Asp	cgg Arg	aag Lys	cca Pro	ttt Phe	35384
					4995					5000					
cta Leu 5005	ttt Phe	gaa Glu	cag Gln	agt Ser	ggg Gly	gat Asp	gtc Val	aac Asn	atg Met	gtt Val	gtc Val	gaa Glu	aaa Lys	cta Leu	35429
					5010					5015					
cta Leu 5020	caa Gln	cat His	ggg Gly	cat His	gaa Glu	att Ile	agc Ser	aat Asn	gga Gly	tac Tyr	gta Val	caa Gln	aat Asn	gcg Ala	35474
					5025					5030					
gtg Val 5035	ggg Gly	acg Thr	ttg Leu	gat Asp	act Thr	gtt Val	att Ile	acc Thr	ggg Gly	cat His	aca Thr	aat Asn	gtt Val	ccc Pro	35519
					5040					5045					
att Ile 5050	tgg Trp	gta Val	aca Thr	agg Arg	ccc Pro	ttg Leu	gtt Val	atg Met	cca Pro	gac Asp	gaa Glu	aag Lys	gat Asp	cca Pro	35564
					5055					5060					
ttg Leu 5065	gag Glu	ctt Leu	ttt Phe	att Ile	aac Asn	ctc Leu	acc Thr	att Ile	ttg Leu	cgt Arg	tta Leu	acg Thr	gga Gly	ttt Phe	35609
					5070					5075					
gtg Val 5080	gtg Val	gaa Glu	aat Asn	gga Gly	aca Thr	cgt Arg	aca Thr	cat His	cat His	ggg Gly	gct Ala	aca Thr	agc Ser	gtt Val	35654
					5085					5090					
gta Val 5095	tca Ser	gac Asp	ttt Phe	ata Ile	ggg Gly	ccc Pro	ctt Leu	ggg Gly	gaa Glu	att Ile	tta Leu	aca Thr	gga Gly	ttt Phe	35699
					5100					5105					



ccc Pro 5110	tcc Ser 5110	gcc Ala 5110	gcg Ala 5110	gaa Glu 5115	ctt Leu 5115	ata Ile 5120	cgc Arg 5120	gtt Val 5120	aca Thr 5120	agt Ser 5120	ttg Leu 5120	ata Ile 5120	tta Leu 5120	aca Thr 5120	35744
aac Asn 5125	atg Met 5125	ccg Pro 5125	ggg Gly 5130	gcg Ala 5130	gaa Glu 5130	tat Tyr 5135	gct Ala 5135	att Ile 5135	aaa Lys 5135	act Thr 5135	gtt Val 5135	ctc Leu 5135	cgg Arg 5135	aaa Lys 5135	35789
aaa Lys 5140	tgt Cys 5140	aca Thr 5140	att Ile 5140	ggc Gly 5145	atg Met 5145	ctc Leu 5150	att Ile 5150	atc Ile 5150	gct Ala 5150	aag Lys 5150	ttt Phe 5150	ggg Gly 5150	cta Leu 5150	gtt Val 5150	35834
gcc Ala 5155	atg Met 5155	cgg Arg 5155	gtt Val 5155	cag Gln 5160	gat Asp 5160	aca Thr 5165	acc Thr 5165	ggc Gly 5165	gct Ala 5165	tta Leu 5165	cat His 5165	gcc Ala 5165	gaa Glu 5165	cta Leu 5165	35879
gat Asp 5170	gtg Val 5170	tta Leu 5170	gaa Glu 5175	gcg Ala 5175	gat Asp 5175	cta Leu 5180	gga Gly 5180	ggg Gly 5180	tcg Ser 5180	tcg Ser 5180	ccc Pro 5180	ata Ile 5180	gac Asp 5180	ctc Leu 5180	35924
tat Tyr 5185	tct Ser 5185	aga Arg 5185	ctg Leu 5185	tcg Ser 5190	aca Thr 5190	ggg Gly 5195	ctt Leu 5195	ata Ile 5195	agt Ser 5195	ata Ile 5195	cta Leu 5195	aat Asn 5195	tcg Ser 5195	cct Pro 5195	35969
att Ile 5200	att Ile 5200	tct Ser 5200	cat His 5200	ccc Pro 5205	gga Gly 5205	ctt Leu 5210	ttt Phe 5210	gcc Ala 5210	gag Glu 5210	ctt Leu 5210	att Ile 5210	cca Pro 5210	acc Thr 5210	cgt Arg 5210	36014
aca Thr 5215	ggg Gly 5215	tcc Ser 5215	ctg Leu 5215	tct Ser 5220	gaa Glu 5220	cga Arg 5225	ata Ile 5225	cggt Arg 5225	ctt Leu 5225	ctt Leu 5225	tgt Cys 5225	gaa Glu 5225	tta Leu 5225	gtc Val 5225	36059
tcg Ser 5230	gcc Ala 5230	cgg Arg 5230	gag Glu 5235	aca Thr 5235	cggt Arg 5235	tat Tyr 5240	atg Met 5240	cggt Arg 5240	gaa Glu 5240	cac His 5240	acc Thr 5240	gcgt Ala 5240	ctt Leu 5240	gtt Val 5240	36104
tct Ser 5245	agt Ser 5245	gta Val 5245	aag Lys 5245	gct Ala 5250	tta Leu 5250	gag Glu 5255	aat Asn 5255	gca Ala 5255	tta Leu 5255	cgg Arg 5255	tct Ser 5255	acc Thr 5255	cggt Arg 5255	aat Asn 5255	36149
aaa Lys 5260	att Ile 5260	gat Asp 5260	gcc Ala 5265	att Ile 5265	caa Gln 5265	ata Ile 5270	cca Pro 5270	gaa Glu 5270	gtt Val 5270	ccc Pro 5270	cag Gln 5270	gaa Glu 5270	ccc Pro 5270	ccg Pro 5270	36194
gaa Glu 5275	gaa Glu 5275	acc Thr 5275	gac Asp 5275	att Ile 5280	cca Pro 5280	ccc Pro 5285	gaa Glu 5285	gag Glu 5285	tta Leu 5285	att Ile 5285	cgg Arg 5285	cggt Arg 5285	gta Val 5285	tat Tyr 5285	36239
gag Glu 5290	ata Ile 5290	cga Arg 5290	tcc Ser 5295	gaa Glu 5295	gtt Val 5295	aca Thr 5300	atg Met 5300	cta Leu 5300	ttg Leu 5300	acc Thr 5300	tcg Ser 5300	gct Ala 5300	gtt Val 5300	aca Thr 5300	36284
gaa Glu 5305	tac Tyr 5305	ttc Phe 5305	acc Thr 5310	cggt Arg 5310	gga Gly 5310	gtg Val 5315	tta Leu 5315	tat Tyr 5315	agc Ser 5315	aca Thr 5315	cgg Arg 5315	gcc Ala 5315	ttg Leu 5315	atc Ile 5315	36329
gct Ala 5320	gaa Glu 5320	caa Gln 5320	tcc Ser 5325	cct Pro 5325	agg Arg 5325	cggt Arg 5330	ttt Phe 5330	cggt Arg 5330	gtc Val 5330	gcgt Ala 5330	acc Thr 5330	gca Ala 5330	agt Ser 5330	acg Thr 5330	36374



gca Ala 5335	ccc Pro	att Ile	caa Gln	cgg Arg	ctt Leu 5340	tta Leu	gat Asp	tct Ser	ctt Leu	ccg Pro 5345	gaa Glu	ttc Phe	gac Asp	gct Ala	36419
aaa Lys 5350	tta Leu	acg Thr	gca Ala	atc Ile	ata Ile 5355	tcg Ser	tcc Ser	ctg Leu	tct Ser	ata Ile 5360	cac His	cct Pro	cct Pro	cct Pro	36464
gag Glu 5365	act Thr	ata Ile	caa Gln	aat Asn	ctc Leu 5370	ccc Pro	gtc Val	gta Val	tct Ser	ctg Leu 5375	tta Leu	aaa Lys	gag Glu	ctt Leu	36509
att Ile 5380	aaa Lys	gaa Glu	ggg Gly	gaa Glu	gat Asp 5385	tta Leu	aac Asn	aca Thr	gac Asp	acg Thr 5390	gct Ala	ctc Leu	gta Val	tcg Ser	36554
tgg Trp 5395	tta Leu	tct Ser	gta Val	gtc Val	ggg Gly 5400	gaa Glu	gct Ala	caa Gln	acc Thr	gca Ala 5405	ggg Gly	tac Tyr	tta Leu	tcc Ser	36599
aga Arg 5410	cga Arg	gag Glu	ttc Phe	gat Asp	gaa Glu 5415	tta Leu	tca Ser	cgt Arg	aca Thr	att Ile 5420	aaa Lys	acc Thr	att Ile	aat Asn	36644
aca Thr 5425	cgc Arg	gca Ala	acg Thr	caa Gln	cgg Arg 5430	gct Ala	tcc Ser	gcg Ala	gaa Glu	gca Ala 5435	gag Glu	ttg Leu	tct Ser	tgc Cys	36689
ttt Phe 5440	aat Asn	acg Thr	cta Leu	agc Ser	gcg Ala 5445	gcc Ala	gta Val	gac Asp	caa Gln	gcc Ala 5450	gta Val	aag Lys	gac Asp	tat Tyr	36734
gaa Glu 5455	aca Thr	tat Tyr	aac Asn	aat Asn	ggg Gly 5460	gag Glu	gtc Val	aag Lys	tat Tyr	cct Pro 5465	gaa Glu	ata Ile	aca Thr	cgg Arg	36779
gat Asp 5470	gat Asp	tta Leu	tta Leu	gca Ala	aca Thr 5475	att Ile	gta Val	cgt Arg	gct Ala	aca Thr 5480	gac Asp	gat Asp	ttg Leu	gtg Val	36824
cga Arg 5485	cag Arg	ata Ile	aaa Lys	att Ile	tta Leu 5490	agt Ser	gat Asp	cca Pro	atg Met	atc Ile 5495	caa Gln	tcc Ser	ggg Gly	tta Leu	36869
caa Gln 5500	cct Pro	tcg Ser	att Ile	aaa Lys	aga Arg 5505	cga Arg	ttg Leu	gaa Glu	aca Thr	agg Arg 5510	ctt Leu	aaa Lys	gag Glu	gtt Val	36914
cag Gln 5515	acg Thr	tat Tyr	gca Ala	aac Asn	gag Glu 5520	gcc Ala	cga Arg	acc Thr	aca Thr	cag Gln 5525	gac Asp	aca Thr	ata Ile	aag Lys	36959
agt Ser 5530	cga Arg	aaa Lys	cag Gln	gcg Ala	gca Ala 5535	tat Tyr	aat Asn	aaa Lys	ctc Leu	ggg Gly 5540	ggg Gly	tta Leu	ctt Leu	cgc Arg	37004
ccg Pro 5545	gta Val	acc Thr	ggg Gly	ttt Phe	gtg Val 5550	gga Gly	ctt Leu	agg Arg	gct Ala	gca Ala 5555	gta Val	gat Asp	tta Leu	tta Leu	37049



ccg Pro 5560	gaa Glu 5560	ctt Leu 5560	gct Ala 5560	tct Ser 5560	gag Glu 5565	tta Leu 5565	gat Asp 5565	gtc Val 5565	caa Gln 5570	gga Gly 5570	gcc Ala 5570	ctg Leu 5570	gta Val 5570	aat Asn 5570	37094
ctc Leu 5575	agg Arg 5575	acc Thr 5575	aaa Lys 5575	gtc Val 5575	tta Leu 5580	gag Glu 5580	gcg Ala 5580	ccg Pro 5580	gta Val 5585	gag Glu 5585	atc Ile 5585	cgt Arg 5585	tct Ser 5585	caa Gln 5585	37139
ctt Leu 5590	acg Thr 5590	ggt Gly 5590	gat Asp 5590	ttc Phe 5590	tgg Trp 5595	gcg Ala 5595	tta Leu 5595	ttt Phe 5595	aac Asn 5600	caa Gln 5600	tat Tyr 5600	cga Arg 5600	gac Asp 5600	att Ile 5600	37184
tta Leu 5605	gaa Glu 5605	cat His 5605	ccc Pro 5605	gga Gly 5610	aac Asn 5610	gca Ala 5610	cgc Arg 5610	aca Thr 5610	tct Ser 5615	gtc Val 5615	tta Leu 5615	gga Gly 5615	gga Gly 5615	ctg Leu 5615	37229
gga Gly 5620	gct Ala 5620	tgt Cys 5620	ttt Phe 5620	aca Thr 5625	gct Ala 5625	att Ile 5625	atc Ile 5625	gaa Glu 5630	att Ile 5630	gtg Val 5630	ccg Pro 5630	ata Ile 5630	cct Pro 5630	acg Thr 5630	37274
gag Glu 5635	tat Tyr 5635	aga Arg 5635	cca Pro 5635	tca Ser 5640	ttg Leu 5640	ctt Leu 5640	gcg Ala 5640	ttt Phe 5645	ttt Phe 5645	ggt Gly 5645	gac Asp 5645	gtg Val 5645	gca Ala 5645	gat Asp 5645	37319
gtg Val 5650	ctt Leu 5650	gca Ala 5650	tcc Ser 5650	gac Asp 5655	atc Ile 5655	gcg Ala 5655	acc Thr 5655	gta Val 5660	tct Ser 5660	act Thr 5660	aac Asn 5660	ccg Pro 5660	gaa Glu 5660	agt Ser 5660	37364
gag Glu 5665	tcc Ser 5665	gcc Ala 5665	ata Ile 5665	aac Asn 5670	gct Ala 5670	gtt Val 5670	gtt Val 5670	gca Ala 5675	act Thr 5675	ctt Leu 5675	agt Ser 5675	aaa Lys 5675	gcg Ala 5675	acg Thr 5675	37409
tta Leu 5680	gtt Val 5680	tca Ser 5680	tct Ser 5685	aca Thr 5685	gtg Val 5685	cca Pro 5685	gcc Ala 5685	tta Leu 5690	tcc Ser 5690	ttt Phe 5690	gtg Val 5690	ttg Leu 5690	tcg Ser 5690	tta Leu 5690	37454
tat Tyr 5695	aaa Lys 5695	aaa Lys 5695	tat Tyr 5695	cag Gln 5700	gct Ala 5700	tta Leu 5700	caa Gln 5700	caa Gln 5705	gaa Glu 5705	att Ile 5705	acg Thr 5705	aat Asn 5705	acc Thr 5705	cat His 5705	37499
aag Lys 5710	ttg Leu 5710	act Thr 5710	gaa Glu 5715	tta Leu 5715	caa Gln 5715	aaa Lys 5715	caa Gln 5715	ctt Leu 5720	gga Gly 5720	gat Asp 5720	gac Asp 5720	ttc Phe 5720	tcc Ser 5720	acc Thr 5720	37544
cta Leu 5725	gct Ala 5725	gtc Val 5725	tca Ser 5730	tct Ser 5730	gga Gly 5730	cac His 5730	ttg Leu 5735	aag Lys 5735	ttt Phe 5735	ata Ile 5735	tca Ser 5735	tct Ser 5735	tca Ser 5735	aat Asn 5735	37589
gta Val 5740	gat Asp 5740	gat Asp 5740	tat Tyr 5745	gaa Glu 5745	ata Ile 5745	aac Asn 5745	gat Asp 5750	gcg Ala 5750	ata Ile 5750	tta Leu 5750	tca Ser 5750	ata Ile 5750	caa Gln 5750	aca Thr 5750	37634
aat Asn 5755	gtg Val 5755	cac His 5755	gcc Ala 5755	cta Leu 5760	atg Met 5760	gat Asp 5760	acg Thr 5765	gtt Val 5765	aaa Lys 5765	ctt Leu 5765	gtt Val 5765	gaa Glu 5765	gtt Val 5765	gaa Glu 5765	37679
ctg Leu 5770	caa Gln 5770	aag Lys 5770	cta Leu 5775	ccc Pro 5775	ccc Pro 5775	cat His 5775	tgt Cys 5775	att Ile 5780	gct Ala 5780	ggg Gly 5780	aca Thr 5780	tct Ser 5780	acc Thr 5780	tta Leu 5780	37724



tct Ser 5785	cga Arg	gta Val	gta Val	aag Lys	gat Asp 5790	ctt Leu	cat His	aaa Lys	ctc Leu	gtc Val 5795	aca Thr	atg Met	gca Ala	cat His	37769
gag Glu 5800	aag Lys	aag Lys	gaa Glu	cag Gln	gca Ala 5805	aaa Lys	gtg Val	tta Leu	att Ile	acc Thr 5810	gat Asp	tgt Cys	gaa Glu	cgt Arg	37814
gca Ala 5815	cat His	aaa Lys	caa Gln	caa Gln	acg Thr 5820	act Thr	cgg Arg	gtt Val	ttg Leu	tat Tyr 5825	gag Glu	cgt Arg	tgg Trp	aca Thr	37859
cgt Arg 5830	gat Asp	att Ile	ata Ile	gca Ala	tgt Cys 5835	ctg Leu	gag Glu	gca Ala	atg Met	gaa Glu 5840	acg Thr	cgc Arg	cat His	ata Ile	37904
ttt Phe 5845	aac Asn	ggg Gly	aca Thr	gaa Glu	ctg Leu 5850	gca Ala	cgg Arg	ttg Leu	cga Arg	gat Asp 5855	atg Met	gcc Ala	gct Ala	gcg Ala	37949
gga Gly 5860	ggg Gly	ttt Phe	gat Asp	ata Ile	cac His 5865	gca Ala	gtt Val	tac Tyr	cca Pro	caa Gln 5870	gca Ala	cgt Arg	cag Gln	gtt Val	37994
gta Val 5875	gcg Ala	gca Ala	tgt Cys	gaa Glu	act Thr 5880	aca Thr	gcc Ala	gtt Val	acg Thr	gca Ala 5885	tta Leu	gat Asp	act Thr	gtg Val	38039
ttt Phe 5890	cgc Arg	cac His	aat Asn	cca Pro	tat Tyr 5895	acc Thr	ccc Pro	gaa Glu	aat Asn	aca Thr 5900	aat Asn	att Ile	cca Pro	cca Pro	38084
cct Pro 5905	ttg Leu	gct Ala	ttg Leu	tta Leu	aga Arg 5910	ggg Gly	tta Leu	aca Thr	tgg Trp	ttt Phe 5915	gat Asp	gat Asp	ttt Phe	tcg Ser	38129
att Ile 5920	acg Thr	gct Ala	ccc Pro	gta Val	ttc Phe 5925	acc Thr	gtt Val	atg Met	ttt Phe	cca Pro 5930	ggg Gly	gtt Val	agt Ser	att Ile	38174
gag Glu 5935	gga Gly	ctc Leu	ctt Leu	ctg Leu	ctt Leu 5940	atg Met	cgt Arg	att Ile	cgc Arg	gcg Ala 5945	gtt Val	gtg Val	tta Leu	tta Leu	38219
tcc Ser 5950	gcc Ala	gat Asp	acg Thr	tct Ser	att Ile 5955	aat Asn	gga Gly	ata Ile	cct Pro	aac Asn 5960	tac Tyr	cga Arg	gat Asp	atg Met	38264
ata Ile 5965	tta Leu	cga Arg	acc Thr	tcg Ser	ggg Gly 5970	gat Asp	cta Leu	tta Leu	caa Gln	ata Ile 5975	ccc Pro	gca Ala	ttg Leu	gct Ala	38309
ggg Gly 5980	tat Tyr	gtt Val	gat Asp	ttt Phe	tac Tyr 5985	aca Thr	cgg Arg	tct Ser	tat Tyr	gat Asp 5990	cag Gln	ttt Phe	ata Ile	acc Thr	38354
gaa Glu 5995	agt Ser	gta Val	acg Thr	tta Leu	agt Ser 6000	gaa Glu	ctt Leu	aga Arg	gca Ala	gac Asp 6005	atc Ile	aga Arg	cag Gln	gct Ala	38399



gcc Ala 6010	ggg Gly	gct Ala	aaa Lys	ctt Leu	aca Thr 6015	gaa Glu	gca Ala	aat Asn	aag Lys	gct Ala 6020	ttg Leu	gag Glu	gaa Glu	gta Val	38444
act Thr 6025	cat His	gtt Val	cgg Arg	gca Ala	cac His 6030	gaa Glu	acg Thr	gct Ala	aaa Lys	ctt Leu 6035	gca Ala	ctt Leu	aaa Lys	gaa Glu	38489
ggg Gly 6040	gtc Val	ttc Phe	att Ile	aca Thr	tta Leu 6045	cca Pro	agc Ser	gaa Glu	ggg Gly	tta Leu 6050	ttg Leu	att Ile	cgg Arg	gct Ala	38534
ata Ile 6055	gag Glu	tat Tyr	ttt Phe	aca Thr	act Thr 6060	ttc Phe	gat Asp	cat His	aaa Lys	cga Arg 6065	ttt Phe	ata Ile	gga Gly	acg Thr	38579
gca Ala 6070	tat Tyr	gaa Glu	aga Arg	gtt Val	tta Leu 6075	caa Gln	aca Thr	atg Met	gta Val	gac Asp 6080	cgc Arg	gat Asp	cta Leu	aag Lys	38624
gag Glu 6085	gcc Ala	aac Asn	gca Ala	gag Glu	ctt Leu 6090	gca Ala	cag Gln	ttt Phe	cgt Arg	atg Met 6095	gtg Val	tgt Cys	cag Gln	gca Ala	38669
aca Thr 6100	aag Lys	aac Asn	cgt Arg	gca Ala	ata Ile 6105	caa Gln	att Ile	tta Leu	caa Gln	aac Asn 6110	att Ile	gtt Val	gat Asp	acg Thr	38714
gcc Ala 6115	aat Asn	gcc Ala	act Thr	gag Glu	caa Gln 6120	caa Gln	gaa Glu	gac Asp	gtg Val	gat Asp 6125	ttc Phe	act Thr	aac Asn	ctg Leu	38759
aag Lys 6130	acg Thr	tta Leu	tta Leu	aaa Lys	cta Leu 6135	acc Thr	ccc Pro	cct Pro	ccc Pro	aaa Lys 6140	aca Thr	att Ile	gca Ala	ttg Leu	38804
gcc Ala 6145	att Ile	gat Asp	aga Arg	tct Ser	act Thr 6150	tcc Ser	gtt Val	cag Gln	gac Asp	att Ile 6155	gtc Val	acg Thr	cag Gln	ttt Phe	38849
gca Ala 6160	ttg Leu	ctg Leu	tta Leu	ggg Gly	cgt Arg 6165	ctg Leu	gaa Glu	gaa Glu	gaa Glu	act Thr 6170	ggg Gly	acg Thr	ttg Leu	gac Asp	38894
att Ile 6175	cag Gln	gcg Ala	gtt Val	gac Asp	tgg Trp 6180	atg Met	tac Tyr	caa Gln	gct Ala	cgc Arg 6185	aat Asn	att Ile	att Ile	gac Asp	38939
tcc Ser 6190	cat His	cca Pro	cta Leu	agt Ser	gtg Val 6195	cgt Arg	ata Ile	gac Asp	ggg Gly	acc Thr 6200	ggc Gly	ccc Pro	ctg Leu	cat His	38984
act Thr 6205	tat Tyr	aaa Lys	gat Asp	agg Arg	gtg Val 6210	gat Asp	aaa Lys	ctt Leu	tat Tyr	gcg Ala 6215	tta Leu	cga Arg	act Thr	aaa Lys	39029
tta Leu 6220	gat Asp	ctc Leu	cta Leu	cga Arg	cga Arg 6225	cga Arg	ata Ile	gaa Glu	acc Thr	ggg Gly 6230	gag Glu	gtt Val	acg Thr	tgg Trp	39074



gac Asp 6235	gat Asp 6235	gca Ala 6235	tgg Trp 6235	aca Thr 6240	aca Thr 6240	ttt Phe 6240	aaa Lys 6240	aga Arg 6240	gaa Glu 6245	acg Thr 6245	ggg Gly 6245	gat Asp 6245	atg Met 6245	ttg Leu 6245	39119
gca Ala 6250	tcg Ser 6250	ggg Gly 6250	gac Asp 6255	acg Thr 6255	tac Tyr 6255	gct Ala 6260	act Thr 6260	tcc Ser 6260	gta Val 6260	gat Asp 6260	agt Ser 6260	ata Ile 6260	aag Lys 6260	gca Ala 6260	39164
ctc Leu 6265	cag Gln 6265	gca Ala 6265	tcg Ser 6265	gcg Ala 6270	tct Ser 6270	gtg Val 6270	gtt Val 6270	gac Asp 6270	atg Met 6270	ctt Leu 6275	tgt Cys 6275	tcc Ser 6275	gaa Glu 6275	ccc Pro 6275	39209
gaa Glu 6280	ttt Phe 6280	ttt Phe 6280	tta Leu 6280	ttg Leu 6285	cct Pro 6285	gtg Val 6290	gaa Glu 6290	acg Thr 6290	aaa Lys 6290	aac Asn 6290	cgt Arg 6290	ctc Leu 6290	caa Gln 6290	aaa Lys 6290	39254
aag Lys 6295	caa Gln 6295	cag Gln 6295	gaa Glu 6295	cgt Arg 6300	aaa Lys 6300	acg Thr 6305	gcg Ala 6305	ttg Leu 6305	gat Asp 6305	gtt Val 6305	gtg Val 6305	ttg Leu 6305	caa Gln 6305	aaa Lys 6305	39299
caa Gln 6310	aga Arg 6310	cag Gln 6310	ttt Phe 6310	gaa Glu 6315	gag Glu 6315	acc Thr 6320	gcg Ala 6320	tct Ser 6320	cgc Arg 6320	tta Leu 6320	cga Arg 6320	gct Ala 6320	tta Leu 6320	att Ile 6320	39344
gaa Glu 6325	cgt Arg 6325	att Ile 6325	cca Pro 6325	acg Thr 6330	gag Glu 6330	agt Ser 6335	gac Asp 6335	cat His 6335	gac Asp 6335	gtt Val 6335	ctt Leu 6335	cgt Arg 6335	atg Met 6335	tta Leu 6335	39389
tta Leu 6340	cgt Arg 6340	gat Asp 6340	ttc Phe 6340	gat Asp 6345	caa Gln 6345	ttt Phe 6350	aca Thr 6350	cat His 6350	ttg Leu 6350	cct Pro 6350	ata Ile 6350	tgg Trp 6350	ata Ile 6350	aaa Lys 6350	39434
aca Thr 6355	cag Gln 6355	tat Tyr 6355	atg Met 6355	aca Thr 6360	ttt Phe 6360	cga Arg 6365	aat Asn 6365	tta Leu 6365	ctc Leu 6365	atg Met 6365	gta Val 6365	cgg Arg 6365	tta Leu 6365	ggc Gly 6365	39479
ttg Leu 6370	tat Tyr 6370	gca Ala 6370	agt Ser 6370	tat Tyr 6375	gct Ala 6375	gag Glu 6380	att Ile 6380	ttt Phe 6380	cca Pro 6380	ccc Pro 6380	gcg Ala 6380	tct Ser 6380	cca Pro 6380	aac Asn 6380	39524
gga Gly 6385	gta Val 6385	ttt Phe 6385	gct Ala 6385	cct Pro 6390	att Ile 6390	ccc Pro 6395	gcc Ala 6395	atg Met 6395	tcg Ser 6395	ggg Gly 6395	gta Val 6395	tgt Cys 6395	cta Leu 6395	gaa Glu 6395	39569
gac Asp 6400	caa Gln 6400	tcc Ser 6400	cga Arg 6400	tgc Cys 6405	att Ile 6405	cgc Arg 6410	gcg Ala 6410	cgg Arg 6410	gtg Val 6410	gcc Ala 6410	gcg Ala 6410	ttt Phe 6410	atg Met 6410	ggg Gly 6410	39614
gag Glu 6415	gcg Ala 6415	tct Ser 6415	gtg Val 6415	gtg Val 6420	caa Gln 6420	acg Thr 6425	ttt Phe 6425	agg Arg 6425	gaa Glu 6425	gcc Ala 6425	aga Arg 6425	tct Ser 6425	tct Ser 6425	ata Ile 6425	39659
gac Asp 6430	gct Ala 6430	ttg Leu 6430	ttt Phe 6430	gga Gly 6435	aaa Lys 6435	aat Asn 6440	tta Leu 6440	acc Thr 6440	ttt Phe 6440	tac Tyr 6440	ttg Leu 6440	gat Asp 6440	act Thr 6440	gat Asp 6440	39704
ggg Gly 6445	gtt Val 6445	cca Pro 6445	ctt Leu 6445	cga Arg 6450	tat Tyr 6450	aga Arg 6455	gtg Val 6455	tgt Cys 6455	tat Tyr 6455	aaa Lys 6455	tca Ser 6455	gtt Val 6455	ggg Gly 6455	gtt Val 6455	39749



aaa Lys 6460	ctt Leu	gga Gly	acc Thr	atg Met	cta Leu 6465	tgc Cys	agt Ser	cag Gln	ggt Gly	gga Gly 6470	tta Leu	tct Ser	tta Leu	cga Arg	39794
ccg Pro 6475	gca Ala	ctt Leu	ccc Pro	gat Asp	gaa Glu 6480	ggt Gly	att Ile	gtg Val	gaa Glu	gaa Glu 6485	act Thr	aca Thr	cta Leu	tcg Ser	39839
gca Ala 6490	tta Leu	cgc Arg	gtg Val	gcc Ala	aat Asn 6495	gag Glu	gtc Val	aat Asn	gag Glu	cta Leu 6500	cgc Arg	att Ile	gaa Glu	tac Tyr	39884
gaa Glu 6505	tcc Ser	gct Ala	ata Ile	aaa Lys	tcc Ser 6510	ggg Gly	ttt Phe	tct Ser	gcc Ala	ttt Phe 6515	tcc Ser	acc Thr	ttt Phe	gtt Val	39929
agg Arg 6520	cat His	cgc Arg	cac His	gcc Ala	gaa Glu 6525	tgg Trp	ggt Gly	aaa Lys	acc Thr	aac Asn 6530	gca Ala	cgc Arg	aga Arg	gcc Ala	39974
att Ile 6535	gca Ala	gag Glu	ata Ile	tac Tyr	gcc Ala 6540	ggc Gly	ctt Leu	ata Ile	aca Thr	aca Thr 6545	aca Thr	ttg Leu	aca Thr	cga Arg	40019
caa Gln 6550	tac Tyr	ggg Gly	gtt Val	cat His	tgg Trp 6555	gac Asp	aag Lys	ctt Leu	att Ile	tat Tyr 6560	tct Ser	ttt Phe	gaa Glu	aaa Lys	40064
cac His 6565	cac His	cta Leu	act Thr	tct Ser	gta Val 6570	atg Met	ggc Gly	aat Asn	gga Gly	cta Leu 6575	act Thr	aaa Lys	cca Pro	atc Ile	40109
cag Gln 6580	aga Arg	agg Arg	ggt Gly	gat Asp	gta Val 6585	cgc Arg	gta Val	tta Leu	gag Glu	tta Leu 6590	acc Thr	cta Leu	tct Ser	gat Asp	40154
att Ile 6595	gta Val	act Thr	att Ile	ttg Leu	gtt Val 6600	gcc Ala	aca Thr	acc Thr	ccg Pro	gta Val 6605	cat His	ctt Leu	ctc Leu	aat Asn	40199
ttt Phe 6610	gct Ala	aga Arg	ttg Leu	gat Asp	tta Leu 6615	att Ile	aaa Lys	cag Gln	cat His	gag Glu 6620	tat Tyr	atg Met	gcc Ala	cgt Arg	40244
acc Thr 6625	ctc Leu	aga Arg	ccc Pro	gta Val	atc Ile 6630	gag Glu	gcc Ala	gca Ala	ttt Phe	aga Arg 6635	ggt Gly	cgt Arg	tta Leu	ctc Leu	40289
gtt Val 6640	cgc Arg	tca Ser	ttg Leu	gat Asp	gga Gly 6645	gac Asp	ccg Pro	aaa Lys	ggc Gly	aat Asn 6650	gcc Ala	cgg Arg	gcc Ala	ttt Phe	40334
ttt Phe 6655	aat Asn	gcc Ala	gcc Ala	cca Pro	tcc Ser 6660	aaa Lys	cat His	aaa Lys	ctc Leu	ccg Pro 6665	tta Leu	gct Ala	ctt Leu	gga Gly	40379
tca Ser 6670	aac Asn	caa Gln	gat Asp	cct Pro	acc Thr 6675	ggc Gly	ggg Gly	aga Arg	ata Ile	ttt Phe 6680	gca Ala	ttt Phe	cgg Arg	atg Met	40424



gca Ala 6685	gat Asp 6685	tgg Trp 6685	aaa Lys 6685	ctt Leu 6685	gtt Val 6690	aaa Lys 6695	atg Met 6695	cca Pro 6695	cag Gln 6695	aaa Lys 6695	ata Ile 6695	acg Thr 6695	gat Asp 6695	cct Pro 6695	40469
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gtc Val 6715	gat Asp 6715	gca Ala 6715	gtt Val 6715	acc Thr 6720	cgt Arg 6720	ata Ile 6725	atg Met 6725	gca Ala 6725	aca Thr 6725	gat Asp 6725	cgt Arg 6725	ctt Leu 6725	gcg Ala 6725	acc Thr 6725	40559
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tca Ser 6745	atg Met 6745	tgg Trp 6745	aat Asn 6750	acg Thr 6750	ctg Leu 6750	caa Gln 6755	ccg Pro 6755	gag Glu 6755	gaa Glu 6755	ttc Phe 6755	gca Ala 6755	tac Tyr 6755	aga Arg 6755	aca Thr 6755	40649
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tta Leu 6790	gag Glu 6790	tgg Trp 6790	aat Asn 6795	aca Thr 6795	gac Asp 6795	cgt Arg 6800	aaa Lys 6800	gta Val 6800	att Ile 6800	aca Thr 6800	gat Asp 6800	gct Ala 6800	tat Tyr 6800	att Ile 6800	40784
caa Gln 6805	acc Thr 6805	ggg Gly 6810	gca Ala 6810	acg Thr 6810	aca Thr 6815	gtt Val 6815	ttt Phe 6815	aca Thr 6815	gta Val 6815	acg Thr 6815	ggg Gly 6815	gcg Ala 6815	gca Ala 6815	cca Pro 6815	40829
act Thr 6820	cac His 6820	gtt Val 6820	tct Ser 6820	aat Asn 6825	gta Val 6825	aca Thr 6830	gcg Ala 6830	ttt Phe 6830	gac Asp 6830	ata Ile 6830	gca Ala 6830	act Thr 6830	acg Thr 6830	gct Ala 6830	40874
att Ile 6835	tta Leu 6835	ttt Phe 6835	ggg Gly 6840	gct Ala 6840	cct Pro 6840	ttg Leu 6845	gtt Val 6845	att Ile 6845	gcc Ala 6845	atg Met 6845	gaa Glu 6845	ctt Leu 6845	aca Thr 6845	tcc Ser 6845	40919
gtt Val 6850	ttt Phe 6850	tca Ser 6850	caa Gln 6855	aat Asn 6855	tcc Ser 6855	gga Gly 6860	ctt Leu 6860	act Thr 6860	ttg Leu 6860	ggg Gly 6860	tta Leu 6860	aaa Lys 6860	tta Leu 6860	ttc Phe 6860	40964
gat Asp 6865	tcc Ser 6865	cgg Arg 6870	cat His 6870	atg Met 6870	gct Ala 6870	aca Thr 6875	gat Asp 6875	tcg Ser 6875	ggt Gly 6875	ata Ile 6875	tcc Ser 6875	tca Ser 6875	gcc Ala 6875	gta Val 6875	41009
tct Ser 6880	ccc Pro 6880	gat Asp 6885	att Ile 6885	gtt Val 6885	tct Ser 6885	tgg Trp 6890	ggg Gly 6890	tta Leu 6890	cgt Arg 6890	tta Leu 6890	ctg Leu 6890	cat His 6890	atg Met 6890	gat Asp 6890	41054
cct Pro 6895	cac His 6900	cca Pro 6900	att Ile 6900	gaa Glu 6900	aat Asn 6900	gca Ala 6905	tgt Cys 6905	tta Leu 6905	att Ile 6905	gtc Val 6905	caa Gln 6905	cta Leu 6905	gaa Glu 6905	aaa Lys 6905	41099



ctg	tcc	gcg	ctc	att	gca	aac	aaa	cct	ctt	aca	aac	aat	ccc	ccg	41144
Leu	Ser	Ala	Leu	Ile	Ala	Asn	Lys	Pro	Leu	Thr	Asn	Asn	Pro	Pro	
6910					6915					6920					
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Cys	Leu	Leu	Leu	Leu	Asp	Glu	His	Met	Asn	Pro	Ser	Tyr	Val	Leu	
6925					6930					6935					
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Trp	Glu	Arg	Lys	Asp	Ser	Ile	Pro	Ala	Pro	Asp	Tyr	Val	Val	Phe	
6940					6945					6950					
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Trp	Gly	Pro	Glu	Ser	Leu	Ile	Asp	Leu	Pro	Tyr	Ile	Asp	Ser	Asp	
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Glu	Asp	Ser	Phe	Pro	Ser	Cys	Pro	Asp	Asp	Pro	Phe	Tyr	Ser	Gln	
6970					6975					6980					
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Ile	Ile	Ala	Gly	Tyr	Ala	Pro	Gln	Gly	Pro	Pro	Asn	Leu	Asp	Thr	
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Thr	Asp	Phe	Tyr	Pro	Thr	Glu	Pro	Leu	Phe	Lys	Ser	Pro	Val	Gln	
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Val	Val	Arg	Ser	Ser	Lys	Cys	Lys	Lys	Met	Pro	Val	Arg	Pro	Ala	
7015					7020					7025					
cag	ccc	gcg	cag	ccc	gcg	cag	ccc	gcg	cag	ccc	gcg	cag	acc	gtc	41504
Gln	Pro	Ala	Gln	Pro	Ala	Gln	Pro	Ala	Gln	Pro	Ala	Gln	Thr	Val	
7030					7035					7040					
cag	ccc	gcg	cag	ccc	ata	gaa	ccg	ggc	aca	caa	ata	gtg	gta	caa	41549
Gln	Pro	Ala	Gln	Pro	Ile	Glu	Pro	Gly	Thr	Gln	Ile	Val	Val	Gln	
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Asn	Phe	Lys	Lys	Pro	Gln	Ser	Val	Lys	Thr	Thr	Leu	Ser	Gln	Lys	
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gat	att	ccc	ttg	tat	gtg	gaa	acc	gaa	tca	gaa	acg	gct	gtg	ctt	41639
Asp	Ile	Pro	Leu	Tyr	Val	Glu	Thr	Glu	Ser	Glu	Thr	Ala	Val	Leu	
7075					7080					7085					
ata	cct	aag	caa	tta	acc	acc	tcc	att	aaa	aca	acc	gtt	tgt	aaa	41684
Ile	Pro	Lys	Gln	Leu	Thr	Thr	Ser	Ile	Lys	Thr	Thr	Val	Cys	Lys	
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Ser	Ile	Thr	Pro	Pro	Asn	Asn	Gln	Leu	Ser	Asp	Trp	Lys	Asn	Asn	
7105					7110					7115					
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Pro	Gln	Gln	Asn	Gln	Thr	Leu	Asn	Gln	Ala	Phe	Ser	Lys	Pro	Ile	
7120					7125					7130					



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Leu	Glu	Ile	Thr	Ser	Ile	Pro	Thr	Asp	Asp	Ser	Ile	Ser	Tyr	Arg	
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Thr	Trp	Ile	Glu	Lys	Ser	Asn	Gln	Thr	Gln	Lys	Arg	His	Gln	Asn	
7150					7155					7160					
gac	cct	cga	atg	tat	aac	tcc	aaa	aca	gta	ttc	cac	cct	gta	aat	41909
Asp	Pro	Arg	Met	Tyr	Asn	Ser	Lys	Thr	Val	Phe	His	Pro	Val	Asn	
7165					7170					7175					
aac	caa	tta	cct	tct	tgg	gtt	gac	acg	gca	gcc	gat	gcc	ccc	caa	41954
Asn	Gln	Leu	Pro	Ser	Trp	Val	Asp	Thr	Ala	Ala	Asp	Ala	Pro	Gln	
7180					7185					7190					
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Thr	Asp	Leu	Leu	Thr	Asn	Tyr	Lys	Thr	Arg	Gln	Pro	Ser	Pro	Asn	
7195					7200					7205					
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Phe	Pro	Arg	Asp	Val	His	Thr	Trp	Gly	Val	Ser	Ser	Asn	Pro	Phe	
7210					7215					7220					
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Asn	Ser	Pro	Asn	Arg	Asp	Leu	Tyr	Gln	Ser	Asp	Phe	Ser	Glu	Pro	
7225					7230					7235					
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Leu	Asp	Glu	His	Arg	Ser	Cys	Arg	Val	Pro	Arg	His	Val	Arg	Val	
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gcc	ttg	gga	gca	ctg	gca	ctg	tta	agc	cag	gca	tgt	cgg	cgt	atg	42269
Ala	Leu	Gly	Ala	Leu	Ala	Leu	Leu	Ser	Gln	Ala	Cys	Arg	Arg	Met	
7285					7290					7295					
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Ile	Asp	Asn	Val	Arg	Tyr	Thr	Arg	Lys	Leu	Leu	Met	Asp	His	Thr	
7300					7305					7310					
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Asp Ile Gln Arg His Phe Phe Leu His Val Cys Phe Arg Thr Asp	7520 7525 7530



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Asn Lys Val Arg Tyr	Ser Asn Tyr Ser Phe	Phe Val Gln Ala Val	
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Val Arg Ala Ala Leu	Leu Ser Ile Ser Thr	Ser Arg Leu Asp Glu	
7565	7570	7575	
acc gaa acg cgt aag	tca ttt tac ttt aat	cag gac gga ctg act	45276
Thr Glu Thr Arg Lys	Ser Phe Tyr Phe Asn	Gln Asp Gly Leu Thr	
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Gly Gly Pro Gln Pro	Leu Ala Ala Ala Leu	Ala Asn Trp Lys Asp	
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Cys Ala Arg Met Val	Asp Cys Ser Ser Ser	Glu His Arg Thr Ser	
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Gly Met Ile Thr Cys	Ala Glu Arg Ala Leu	Lys Glu Asp Ile Glu	
7625	7630	7635	
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Phe Glu Asp Ile Leu	Ile Asp Lys Leu Lys	Lys Ser Ser Tyr Val	
7640	7645	7650	
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Glu Ala Ala Trp Gly	Tyr Ala Asp Leu Ala	Leu Leu Leu Leu Ser	
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Gly Val Ala Thr Trp	Asn Val Asp Glu Arg	Thr Asn Cys Ala Ile	
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Glu Thr Arg Val Gly	Cys Val Lys Ser Tyr	Trp Gln Ala Asn Arg	
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Ile Glu Asn Ser Arg	Asp Val Pro Lys Gln	Phe Ser Lys Phe Thr	
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Ser Glu Asp Ala Cys	Pro Glu Val Ala Phe	Gly Pro Ile Leu Leu	
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7730	7735	7740	
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Cys Met Leu Cys Cys	Leu Leu Thr Ile Gly	His Tyr Trp Ile Ala	
7745	7750	7755	



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Arg Phe Ile Thr Ile	Val Lys Ala Ala Gly	Ser Glu Ala Val Tyr	
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Lys His Leu Phe Cys	Asp Leu Leu Cys Ala	Leu Ser Glu Leu Gln	
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Ala	Cys Asn	Ala Ala	Arg	Glu Arg	Phe Gly	Phe	Ser Arg	Cys Gln	
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Gly	Pro Pro	Val Asp	Gly	Ala Val	Glu Thr	Thr	Gly Ala	Glu Ile	
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Cys	Thr Arg	Leu Gly	Leu	Glu Pro	Glu Asn	Thr	Ile Leu	Tyr Leu	
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Pro	Ala	Pro	Arg	Cys	Met	Tyr	Ala	Ile	Ser	Glu	Leu	Lys	Phe	Trp				
		9425					9430					9435						
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Leu	Thr	Ser	Asn	Ser	Thr	Glu	Gly	Pro	Gln	Arg	Thr	Leu	Asp	Val				
		9440					9445					9450						
ttt	gtt	gat	aat	ttg	gat	gta	tta	aac	gaa	cat	gaa	aaa	cac	gca	55685			
Phe	Val	Asp	Asn	Leu	Asp	Val	Leu	Asn	Glu	His	Glu	Lys	His	Ala				
		9455					9460					9465						
gaa	ctt	aca	gcc	gta	acg	gtt	gag	ttg	gcg	tta	ttt	gga	aaa	act	55730			
Glu	Leu	Thr	Ala	Val	Thr	Val	Glu	Leu	Ala	Leu	Phe	Gly	Lys	Thr				
		9470					9475					9480						
ccc	ata	cac	ttt	gat	agg	gcg	ttt	tct	gaa	gaa	ctc	gga	tct	ctg	55775			
Pro	Ile	His	Phe	Asp	Arg	Ala	Phe	Ser	Glu	Glu	Leu	Gly	Ser	Leu				
		9485					9490					9495						
gat	gca	att	gat	agt	att	ttg	gtt	ggc	aat	cgc	tca	tcc	tca	cca	55820			
Asp	Ala	Ile	Asp	Ser	Ile	Leu	Val	Gly	Asn	Arg	Ser	Ser	Ser	Pro				
		9500					9505					9510						
gac	agt	cag	ata	gaa	gca	tta	att	aaa	gcc	tgt	tat	gcc	cat	cat	55865			
Asp	Ser	Gln	Ile	Glu	Ala	Leu	Ile	Lys	Ala	Cys	Tyr	Ala	His	His				
		9515					9520					9525						
cta	tcg	tcg	cct	ctc	atg	cgt	cac	att	tct	aac	ccg	agt	cat	gat	55910			
Leu	Ser	Ser	Pro	Leu	Met	Arg	His	Ile	Ser	Asn	Pro	Ser	His	Asp				
		9530					9535					9540						
aac	gaa	gcc	gcc	tta	cgc	caa	ctt	tta	gaa	aga	gtt	ggg	tgt	gag	55955			
Asn	Glu	Ala	Ala	Leu	Arg	Gln	Leu	Leu	Glu	Arg	Val	Gly	Cys	Glu				
		9545					9550					9555						
gat	gat	tta	acc	aaa	gag	gcg	agt	gac	agc	gct	aca	gca	tcc	gaa	56000			
Asp	Asp	Leu	Thr	Lys	Glu	Ala	Ser	Asp	Ser	Ala	Thr	Ala	Ser	Glu				
		9560					9565					9570						
tgt	gat	ctg	aac	gat	gat	agt	agc	ata	act	ttt	gct	gtt	cat	gga	56045			
Cys	Asp	Leu	Asn	Asp	Asp	Ser	Ser	Ile	Thr	Phe	Ala	Val	His	Gly				
		9575					9580					9585						
tgg	gaa	aac	ctg	tta	tcc	aaa	gca	aaa	att	gac	gct	gcg	gaa	aga	56090			
Trp	Glu	Asn	Leu	Leu	Ser	Lys	Ala	Lys	Ile	Asp	Ala	Ala	Glu	Arg				
		9590					9595					9600						
aaa	cga	gta	tat	ctt	gaa	cat	ctg	tct	aag	cgc	tct	cta	acc	agc	56135			
Lys	Arg	Val	Tyr	Leu	Glu	His	Leu	Ser	Lys	Arg	Ser	Leu	Thr	Ser				
		9605					9610					9615						
ctc	ggt	aga	tgt	atc	cgc	gaa	cag	cgc	caa	gag	cta	gaa	aaa	aca	56180			
Leu	Gly	Arg	Cys	Ile	Arg	Glu	Gln	Arg	Gln	Glu	Leu	Glu	Lys	Thr				



9620				9625				9630							
ctc	agg	gta	aac	ggt	tat	gga	gag	gcc	tta	ttg	cag	aca	ttt	ggt	56225
Leu	Arg	Val	Asn	Val	Tyr	Gly	Glu	Ala	Leu	Leu	Gln	Thr	Phe	Val	
		9635					9640							9645	
tcg	atg	caa	aat	ggg	ttt	ggg	gca	cga	aac	gtg	ttt	tta	gct	aag	56270
Ser	Met	Gln	Asn	Gly	Phe	Gly	Ala	Arg	Asn	Val	Phe	Leu	Ala	Lys	
		9650					9655							9660	
gtt	tcc	cag	gca	ggg	tgt	att	atc	gac	aat	cgc	att	cag	gaa	gcg	56315
Val	Ser	Gln	Ala	Gly	Cys	Ile	Ile	Asp	Asn	Arg	Ile	Gln	Glu	Ala	
		9665					9670							9675	
gcc	ttt	gat	gca	cat	aga	ttt	ata	agg	aat	acc	tta	gtt	cga	cat	56360
Ala	Phe	Asp	Ala	His	Arg	Phe	Ile	Arg	Asn	Thr	Leu	Val	Arg	His	
		9680					9685							9690	
aca	gta	gat	gcg	gct	atg	tta	cct	gca	ctt	aca	cat	aaa	ttt	ttt	56405
Thr	Val	Asp	Ala	Ala	Met	Leu	Pro	Ala	Leu	Thr	His	Lys	Phe	Phe	
		9695					9700							9705	
gag	ttg	gtc	aac	ggc	cca	ttg	ttt	aat	cac	gat	gaa	cac	cgt	ttt	56450
Glu	Leu	Val	Asn	Gly	Pro	Leu	Phe	Asn	His	Asp	Glu	His	Arg	Phe	
		9710					9715							9720	
gca	caa	ccc	cct	aac	acc	gcc	tta	ttt	ttt	acc	gtg	gaa	aac	gtt	56495
Ala	Gln	Pro	Pro	Asn	Thr	Ala	Leu	Phe	Phe	Thr	Val	Glu	Asn	Val	
		9725					9730							9735	
ggc	cta	ttt	ccg	cac	tta	aaa	gag	gaa	ttg	gca	aag	ttt	atg	ggc	56540
Gly	Leu	Phe	Pro	His	Leu	Lys	Glu	Glu	Leu	Ala	Lys	Phe	Met	Gly	
		9740					9745							9750	
ggg	gtc	gtt	ggg	tcc	aac	tgg	ctt	ctc	agt	cca	ttt	agg	ggc	ttt	56585
Gly	Val	Val	Gly	Ser	Asn	Trp	Leu	Leu	Ser	Pro	Phe	Arg	Gly	Phe	
		9755					9760							9765	
tat	tgc	ttt	tct	ggg	gta	gaa	ggc	gtt	act	ttt	gca	cag	aga	ctt	56630
Tyr	Cys	Phe	Ser	Gly	Val	Glu	Gly	Val	Thr	Phe	Ala	Gln	Arg	Leu	
		9770					9775							9780	
gcc	tgg	aaa	tat	att	agg	gag	ctt	gtg	ttt	gca	acc	aca	cta	ttc	56675
Ala	Trp	Lys	Tyr	Ile	Arg	Glu	Leu	Val	Phe	Ala	Thr	Thr	Leu	Phe	
		9785					9790							9795	
acc	tct	gtt	ttc	cat	tgt	ggg	gag	gtg	cgg	tta	tgt	cgc	gtt	gac	56720
Thr	Ser	Val	Phe	His	Cys	Gly	Glu	Val	Arg	Leu	Cys	Arg	Val	Asp	
		9800					9805							9810	
cgt	cta	ggg	aag	gat	cca	cgc	ggg	tgc	acg	tct	caa	cct	aaa	ggg	56765
Arg	Leu	Gly	Lys	Asp	Pro	Arg	Gly	Cys	Thr	Ser	Gln	Pro	Lys	Gly	
		9815					9820							9825	
ata	ggc	agt	tcc	cac	gga	ccc	tta	gac	ggc	att	tat	tta	acg	tac	56810
Ile	Gly	Ser	Ser	His	Gly	Pro	Leu	Asp	Gly	Ile	Tyr	Leu	Thr	Tyr	
		9830					9835							9840	
gaa	gaa	aca	tgt	ccc	ctt	gtg	gct	att	att	caa	agt	gga	gaa	aca	56855
Glu	Glu	Thr	Cys	Pro	Leu	Val	Ala	Ile	Ile	Gln	Ser	Gly	Glu	Thr	



9845	9850	9855	
ggg atc gac cag aat acc gtc gta atc tac gat tca gac gtt ttt			56900
Gly Ile Asp Gln Asn Thr Val Val Ile Tyr Asp Ser Asp Val Phe			
9860	9865	9870	
tct ctt cta tac acc cta atg cag cgg ctg gct ccg gat tca acg			56945
Ser Leu Leu Tyr Thr Leu Met Gln Arg Leu Ala Pro Asp Ser Thr			
9875	9880	9885	
gac ccg gcg ttt tca taa cctccgttac ggggggtgtgg ttatgctttt			56993
Asp Pro Ala Phe Ser			
9890			
tatgcatatt ttct atg ttt gtt acg gcg gtt gtg tcg gtc tct cca agc			57043
Met Phe Val Thr Ala Val Val Ser Val Ser Pro Ser			
9895	9900		
tcg ttt tat gag agt tta caa gta gag ccc aca caa tca gaa gat			57088
Ser Phe Tyr Glu Ser Leu Gln Val Glu Pro Thr Gln Ser Glu Asp			
9905	9910	9915	
ata acc ccg tct gct cat ctg ggc gat ggt gat gaa atc aga gaa			57133
Ile Thr Arg Ser Ala His Leu Gly Asp Gly Asp Glu Ile Arg Glu			
9920	9925	9930	
gct ata cac aag tcc cag gac gcc gaa aca aaa ccc acg ttt tac			57178
Ala Ile His Lys Ser Gln Asp Ala Glu Thr Lys Pro Thr Phe Tyr			
9935	9940	9945	
gtc tgc cca ccg cca aca ggc tcc aca atc gta cga tta gaa cca			57223
Val Cys Pro Pro Pro Thr Gly Ser Thr Ile Val Arg Leu Glu Pro			
9950	9955	9960	
act ccg aca tgt ccg gat tat cac ctt ggt aaa aac ttt aca gag			57268
Thr Arg Thr Cys Pro Asp Tyr His Leu Gly Lys Asn Phe Thr Glu			
9965	9970	9975	
ggt att gct gtt gtt tat aaa gaa aac att gca gcg tac aag ttt			57313
Gly Ile Ala Val Val Tyr Lys Glu Asn Ile Ala Ala Tyr Lys Phe			
9980	9985	9990	
aag gcg acg gta tat tac aaa gat gtt atc gtt agc acg gcg tgg			57358
Lys Ala Thr Val Tyr Tyr Lys Asp Val Ile Val Ser Thr Ala Trp			
9995	10000	10005	
gcc gga agt tct tat acg caa att act aat aga tat gcg gat agg			57403
Ala Gly Ser Ser Tyr Thr Gln Ile Thr Asn Arg Tyr Ala Asp Arg			
10010	10015	10020	
gta cca att ccc gtt tca gag atc acg gac acc att gat aag ttt			57448
Val Pro Ile Pro Val Ser Glu Ile Thr Asp Thr Ile Asp Lys Phe			
10025	10030	10035	
ggc aag tgt tct tct aaa gca acg tac gta cga aat aac cac aaa			57493
Gly Lys Cys Ser Ser Lys Ala Thr Tyr Val Arg Asn Asn His Lys			
10040	10045	10050	
gtt gaa gcc ttt aat gag gat aaa aat cca cag gat atg cct cta			57538
Val Glu Ala Phe Asn Glu Asp Lys Asn Pro Gln Asp Met Pro Leu			



10055	10060	10065	
atc gca tca aaa tat aat Ile Ala Ser Lys Tyr Asn 10070	tct gtg gga tcc aaa Ser Val Gly Ser Lys 10075	gca tgg cat act Ala Trp His Thr 10080	57583
acc aat gac acg tac atg Thr Asn Asp Thr Tyr Met 10085	gtt gcc gga acc ccc Val Ala Gly Thr Pro 10090	gga aca tat agg Gly Thr Tyr Arg 10095	57628
acg ggc acg tcg gtg aat Thr Gly Thr Ser Val Asn 10100	tgc atc att gag gaa Cys Ile Ile Glu Glu 10105	gtt gaa gcc aga Val Glu Ala Arg 10110	57673
tca ata ttc cct tat gat Ser Ile Phe Pro Tyr Asp 10115	agt ttt gga ctt tcc Ser Phe Gly Leu Ser 10120	acg gga gat ata Thr Gly Asp Ile 10125	57718
ata tac atg tcc ccg ttt Ile Tyr Met Ser Pro Phe 10130	ttt ggc cta cgg gat Phe Gly Leu Arg Asp 10135	ggc gca tac aga Gly Ala Tyr Arg 10140	57763
gaa cat tcc aat tat gca Glu His Ser Asn Tyr Ala 10145	atg gat cgt ttt cac Met Asp Arg Phe His 10150	cag ttt gag ggt Gln Phe Glu Gly 10155	57808
tat aga caa agg gat ctt Tyr Arg Gln Arg Asp Leu 10160	gac act aga gca tta Asp Thr Arg Ala Leu 10165	ctg gaa cct gca Leu Glu Pro Ala 10170	57853
gcg cgg aac ttt tta gtc Ala Arg Asn Phe Leu Val 10175	acg cct cat tta acg Thr Pro His Leu Thr 10180	gtt ggt tgg aac Val Gly Trp Asn 10185	57898
tgg aag cca aaa cga acg Trp Lys Pro Lys Arg Thr 10190	gaa gtt tgt tcg ctt Glu Val Cys Ser Leu 10195	gtc aag tgg cgt Val Lys Trp Arg 10200	57943
gag gtt gaa gac gta gtt Glu Val Glu Asp Val Val 10205	cgc gat gag tat gca Arg Asp Glu Tyr Ala 10210	cac aat ttt cgc His Asn Phe Arg 10215	57988
ttt aca atg aaa aca ctt Phe Thr Met Lys Thr Leu 10220	tct acc acg ttt ata Ser Thr Thr Phe Ile 10225	agt gaa aca aac Ser Glu Thr Asn 10230	58033
gag ttt aat ctt aac caa Glu Phe Asn Leu Asn Gln 10235	atc cat ctc agt caa Ile His Leu Ser Gln 10240	tgt gta aag gag Cys Val Lys Glu 10245	58078
gaa gcc cgg gct att att Glu Ala Arg Ala Ile Ile 10250	aac cgg atc tat aca Asn Arg Ile Tyr Thr 10255	acc aga tac aac Thr Arg Tyr Asn 10260	58123
tca tct cat gtt aga acc Ser Ser His Val Arg Thr 10265	ggg gat atc cag acc Gly Asp Ile Gln Thr 10270	tac ctt gcc aga Tyr Leu Ala Arg 10275	58168
ggg ggg ttt gtt gtg gtg Gly Gly Phe Val Val Val 10280	ttt caa ccc ctg ctg Phe Gln Pro Leu Leu 10285	agc aat tcc ctc Ser Asn Ser Leu 10290	58213



10280		10285		10290	
gcc	cgt ctc tat ctc	caa	gaa ttg gtc cgt	gaa	aac act aat cat 58258
Ala	Arg Leu Tyr Leu	Gln	Glu Leu Val Arg	Glu	Asn Thr Asn His
10295		10300		10305	
tca	cca caa aaa cac	ccg	act cga aat acc	aga	tcc cga cga agc 58303
Ser	Pro Gln Lys His	Pro	Thr Arg Asn Thr	Arg	Ser Arg Arg Ser
10310		10315		10320	
gtg	cca gtt gag ttg	cgt	gcc aat aga aca	ata	aca acc acc tca 58348
Val	Pro Val Glu Leu	Arg	Ala Asn Arg Thr	Ile	Thr Thr Thr Ser
10325		10330		10335	
tcg	gtg gaa ttt gct	atg	ctc cag ttt aca	tat	gac cac att caa 58393
Ser	Val Glu Phe Ala	Met	Leu Gln Phe Thr	Tyr	Asp His Ile Gln
10340		10345		10350	
gag	cat gtt aat gaa	atg	ttg gca cgt atc	tcc	tcg tcg tgg tgc 58438
Glu	His Val Asn Glu	Met	Leu Ala Arg Ile	Ser	Ser Ser Trp Cys
10355		10360		10365	
cag	cta caa aat cgc	gaa	cgc gcc ctt tgg	agc	gga cta ttt cca 58483
Gln	Leu Gln Asn Arg	Glu	Arg Ala Leu Trp	Ser	Gly Leu Phe Pro
10370		10375		10380	
att	aac cca agt gct	tta	gcg agc acc att	ttg	gat caa cgt gtt 58528
Ile	Asn Pro Ser Ala	Leu	Ala Ser Thr Ile	Leu	Asp Gln Arg Val
10385		10390		10395	
aaa	gct cgt att ctc	ggc	gac gtt atc tcc	gtt	tct aat tgt cca 58573
Lys	Ala Arg Ile Leu	Gly	Asp Val Ile Ser	Val	Ser Asn Cys Pro
10400		10405		10410	
gaa	ctg gga tca gat	aca	cgc att ata ctt	caa	aac tct atg agg 58618
Glu	Leu Gly Ser Asp	Thr	Arg Ile Ile Leu	Gln	Asn Ser Met Arg
10415		10420		10425	
gta	tct ggt agt act	acg	cgt tgt tat agc	cgt	cct tta att tca 58663
Val	Ser Gly Ser Thr	Thr	Arg Cys Tyr Ser	Arg	Pro Leu Ile Ser
10430		10435		10440	
ata	gtt agt tta aat	ggg	tcc ggg acg gtg	gag	ggc cag ctt gga 58708
Ile	Val Ser Leu Asn	Gly	Ser Gly Thr Val	Glu	Gly Gln Leu Gly
10445		10450		10455	
aca	gat aac gag tta	att	atg tcc aga gat	ctg	tta gaa cca tgc 58753
Thr	Asp Asn Glu Leu	Ile	Met Ser Arg Asp	Leu	Leu Glu Pro Cys
10460		10465		10470	
gtg	gct aat cac aag	cga	tat ttt cta ttt	ggg	cat cac tac gta 58798
Val	Ala Asn His Lys	Arg	Tyr Phe Leu Phe	Gly	His His Tyr Val
10475		10480		10485	
tat	tat gag gat tat	cgt	tac gtc cgt gaa	atc	gca gtc cat gat 58843
Tyr	Tyr Glu Asp Tyr	Arg	Tyr Val Arg Glu	Ile	Ala Val His Asp
10490		10495		10500	
gtg	gga atg att agc	act	tac gta gat tta	aac	tta aca ctt ctt 58888
Val	Gly Met Ile Ser	Thr	Tyr Val Asp Leu	Asn	Leu Thr Leu Leu



10505		10510		10515	
aaa	gat aga gag ttt atg	ccg ctg caa gta tat	aca aga gac gag	58933	
Lys	Asp Arg Glu Phe Met	Pro Leu Gln Val Tyr	Thr Arg Asp Glu		
10520	10525	10530			
ctg	cgg gat aca gga tta	cta gac tac agt gaa	att caa cgc cga	58978	
Leu	Arg Asp Thr Gly Leu	Leu Asp Tyr Ser Glu	Ile Gln Arg Arg		
10535	10540	10545			
aat	caa atg cat tcg ctg	cgt ttt tat gac ata	gac aag gtt gtg	59023	
Asn	Gln Met His Ser Leu	Arg Phe Tyr Asp Ile	Asp Lys Val Val		
10550	10555	10560			
caa	tat gat agc gga acg	gcc att atg cag ggc	atg gct cag ttt	59068	
Gln	Tyr Asp Ser Gly Thr	Ala Ile Met Gln Gly	Met Ala Gln Phe		
10565	10570	10575			
ttc	cag gga ctt ggg acc	gcg ggc cag gcc gtt	gga cat gtg gtt	59113	
Phe	Gln Gly Leu Gly Thr	Ala Gly Gln Ala Val	Gly His Val Val		
10580	10585	10590			
ctt	ggg gcc acg gga gcg	ctg ctt tcc acc gta	cac gga ttt acc	59158	
Leu	Gly Ala Thr Gly Ala	Leu Leu Ser Thr Val	His Gly Phe Thr		
10595	10600	10605			
acg	ttt tta tct aac cca	ttt ggg gca ttg gcc	gtg gga tta ttg	59203	
Thr	Phe Leu Ser Asn Pro	Phe Gly Ala Leu Ala	Val Gly Leu Leu		
10610	10615	10620			
gtt	ttg gcg gga ctg gta	gcg gcc ttt ttt gcg	tac cgg tac gtg	59248	
Val	Leu Ala Gly Leu Val	Ala Ala Phe Phe Ala	Tyr Arg Tyr Val		
10625	10630	10635			
ctt	aaa ctt aaa aca agc	ccg atg aag gca tta	tat cca ctc aca	59293	
Leu	Lys Leu Lys Thr Ser	Pro Met Lys Ala Leu	Tyr Pro Leu Thr		
10640	10645	10650			
acc	aag ggg tta aaa cag	tta ccg gaa gga atg	gat ccc ttt gcc	59338	
Thr	Lys Gly Leu Lys Gln	Leu Pro Glu Gly Met	Asp Pro Phe Ala		
10655	10660	10665			
gag	aaa ccc aac gct act	gat acc cca ata gaa	gaa att ggc gac	59383	
Glu	Lys Pro Asn Ala Thr	Asp Thr Pro Ile Glu	Glu Ile Gly Asp		
10670	10675	10680			
tca	caa aac act gaa ccg	tcg gta aat agc ggg	ttt gat ccc gat	59428	
Ser	Gln Asn Thr Glu Pro	Ser Val Asn Ser Gly	Phe Asp Pro Asp		
10685	10690	10695			
aaa	ttt cga gaa gcc cag	gaa atg att aaa tat	atg acg tta gta	59473	
Lys	Phe Arg Glu Ala Gln	Glu Met Ile Lys Tyr	Met Thr Leu Val		
10700	10705	10710			
tct	gcg gct gag cgc caa	gaa tct aaa gcc cgc	aaa aaa aat aag	59518	
Ser	Ala Ala Glu Arg Gln	Glu Ser Lys Ala Arg	Lys Lys Asn Lys		
10715	10720	10725			
act	agc gcc ctt tta act	tca cgt ctt acc ggc	ctt gct tta cga	59563	
Thr	Ser Ala Leu Leu Thr	Ser Arg Leu Thr Gly	Leu Ala Leu Arg		



10730	10735	10740	
aat cgc cga gga tac tcc	cgt gtt cgc acc gag	aat gta acg ggg	59608
Asn Arg Arg Gly Tyr Ser	Arg Val Arg Thr Glu	Asn Val Thr Gly	
10745	10750	10755	
gtg taa atagccaggg ggtttgtttt aattttattaa taaaaatgtg tattacgtta			59664
Val			
10760			
ctcatgtgtc tccattacgc atcacagggg gtattttatac ccgataatat acaaaacgcg			59724
ttttgtacct ctaccgcacc cgatatctta acgggggttat t atg gaa tcg tct			59777
	Met Glu Ser Ser		
aac att aac gcg cta caa	caa ccg tcg tct atc	gca cat cat ccg	59822
Asn Ile Asn Ala Leu Gln	Gln Pro Ser Ser Ile	Ala His His Pro	
10765	10770	10775	
tcc aaa cag tgc gct tca	agt ctc aat gaa aca	gta aaa gat tct	59867
Ser Lys Gln Cys Ala Ser	Ser Leu Asn Glu Thr	Val Lys Asp Ser	
10780	10785	10790	
ccc ccc gcg att tat gaa	gat agg tta gaa cac	acg ccg gta caa	59912
Pro Pro Ala Ile Tyr Glu	Asp Arg Leu Glu His	Thr Pro Val Gln	
10795	10800	10805	
tta ccc cgc gac ggt aca	ccc cga gac gta tgt	tct gtg gga cag	59957
Leu Pro Arg Asp Gly Thr	Pro Arg Asp Val Cys	Ser Val Gly Gln	
10810	10815	10820	
cta acc tgt cga gca tgt	gca acg aaa cct ttt	cgc ctt aac cgc	60002
Leu Thr Cys Arg Ala Cys	Ala Thr Lys Pro Phe	Arg Leu Asn Arg	
10825	10830	10835	
gac agc caa tac gac tac	tta aac aca tgt cca	ggg ggc cgt cat	60047
Asp Ser Gln Tyr Asp Tyr	Leu Asn Thr Cys Pro	Gly Gly Arg His	
10840	10845	10850	
att tca ctg gca ctg gag	att ata acg ggt cga	tgg gtt tgc atc	60092
Ile Ser Leu Ala Leu Glu	Ile Ile Thr Gly Arg	Trp Val Cys Ile	
10855	10860	10865	
ccg cgt gtg ttt ccg gat	acc cca gag gaa aaa	tgg atg gcg cca	60137
Pro Arg Val Phe Pro Asp	Thr Pro Glu Glu Lys	Trp Met Ala Pro	
10870	10875	10880	
tat att att cca gac cga	gaa caa cca tca tca	ggg gat gaa gat	60182
Tyr Ile Ile Pro Asp Arg	Glu Gln Pro Ser Ser	Gly Asp Glu Asp	
10885	10890	10895	
tct gac acc gat taa atttaactta aataaaacct taccacccat aaaaacgcct			60237
Ser Asp Thr Asp			
10900			
tctgtttgtt taacacgaca ccgcttaaca aaaaaaaaaa aaccaaacac gcctttttatg			60297
aatgtaatac ttttatttgt tgggtaaacac cgccccacca tcatctgatt tgcaaacata			60357



tcggcgctcgt	ctgccgtgga	cccctgtatt	aaaggggcct	tggaactcgc	ctccactgca	60417
tttacatctt	gtccaactgt	atctgtatgt	ggggtgcttg	ttgtattttg	ggatgagcat	60477
agacccgaaa	cgctttgaag	ctgttttaat	aaaatcgata	ttcgaggatc	cgtgtcccc	60537
tctggtatat	ttgtatggtg	cgacaaaggc	atttgtgtcc	cattttgtga	ttttagctct	60597
gtaacctcct	gttgtagttt	tgccacaacc	ccagcaagct	cttcgtgctg	accattagaa	60657
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His Phe Gln Ser Leu Phe Cys Ser Pro His Ala Ile Met His Ala	
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Lys Ile Ser Ala Leu Met Asp Thr Ser Thr Ser Asp Leu Val Gln	
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Val Asn Lys Glu Pro	Tyr Lys Ile Met Leu	Ser Asp Arg His Pro	
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Ile Ala Ser Thr Ile	Cys Phe Pro Leu Ser	Arg Tyr Leu Val Gly	
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Asp Met Ser Pro Ala	Ala Leu Pro Gly Leu	Leu Phe Thr Leu Pro	
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Ala Glu Pro Pro Gly	Thr Asn Leu Val Val	Cys Thr Val Ser Leu	
11070	11075	11080	
ccc agt cat tta tcc	aga gta agc aaa cgg	gcc aga ccg gga gaa	65382
Pro Ser His Leu Ser	Arg Val Ser Lys Arg	Ala Arg Pro Gly Glu	
11085	11090	11095	
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Thr Val Asn Leu Pro	Phe Val Met Val Leu	Arg Asn Val Tyr Ile	
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Met Leu Ile Asn Thr	Ile Ile Phe Leu Lys	Thr Asn Asn Trp His	
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Ala Gly Trp Asn Thr	Leu Ser Phe Cys Asn	Asp Val Phe Lys Gln	
11130	11135	11140	
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Lys Leu Gln Lys Ser	Glu Cys Ile Lys Leu	Arg Glu Val Pro Gly	
11145	11150	11155	
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Ile Glu Asp Thr Leu	Phe Ala Val Leu Lys	Leu Pro Glu Leu Cys	
11160	11165	11170	
gga gag ttt gga aat	att ctg ccg tta tgg	gca tgg gga atg gag	65652
Gly Glu Phe Gly Asn	Ile Leu Pro Leu Trp	Ala Trp Gly Met Glu	
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acc ctt tca aac tgc	tca cga agc atg tct	ccg ttc gta tta tcg	65697
Thr Leu Ser Asn Cys	Ser Arg Ser Met Ser	Pro Phe Val Leu Ser	
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Leu Glu Gln Thr Pro	Gln His Ala Ala Gln	Glu Leu Lys Thr Leu	
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Leu Pro Gln Met Thr	Pro Ala Asn Met Ser	Ser Gly Ala Trp Asn	
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Ile Leu Lys Glu Leu	Val Asn Ala Val Gln	Asp Asn Thr Ser	
11235	11240		



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Met	Phe Ala Leu Val Leu	Ala Val Val Ile Leu	Pro Leu Trp			
11245	11250	11255				
acc acg	gct aat aaa tct tac	gta aca cca acc cct	gcg act cgc			66160
Thr Thr	Ala Asn Lys Ser Tyr	Val Thr Pro Thr Pro	Ala Thr Arg			
11260	11265	11270				
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Ser Ile	Gly His Met Ser Ala	Leu Leu Arg Glu Tyr	Ser Asp Arg			
11275	11280	11285				
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Asn Met	Ser Leu Lys Leu Glu	Ala Phe Tyr Pro Thr	Gly Phe Asp			
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Glu Glu	Leu Ile Lys Ser Leu	His Trp Gly Asn Asp	Arg Lys His			
11305	11310	11315				
gtt ttc	ttg gtt att gtt aag	gtt aac cct aca aca	cac gaa gga			66340
Val Phe	Leu Val Ile Val Lys	Val Asn Pro Thr Thr	His Glu Gly			
11320	11325	11330				
gac gtc	ggg ctg gtt ata ttt	cca aaa tac ttg tta	tcg cca tac			66385
Asp Val	Gly Leu Val Ile Phe	Pro Lys Tyr Leu Leu	Ser Pro Tyr			
11335	11340	11345				
cat ttc	aaa gca gaa cat cga	gca ccg ttt cct gct	gga cgt ttt			66430
His Phe	Lys Ala Glu His Arg	Ala Pro Phe Pro Ala	Gly Arg Phe			
11350	11355	11360				
gga ttt	ctt agt cac cct gtg	aca ccc gac gtg agc	ttc ttt gac			66475
Gly Phe	Leu Ser His Pro Val	Thr Pro Asp Val Ser	Phe Phe Asp			
11365	11370	11375				
agt tcg	ttt gcg ccg tat tta	act acg caa cat ctt	gtt gcg ttt			66520
Ser Ser	Phe Ala Pro Tyr Leu	Thr Thr Gln His Leu	Val Ala Phe			
11380	11385	11390				
act acg	ttc cca cca aac ccc	ctt gta tgg cat ttg	gaa aga gct			66565
Thr Thr	Phe Pro Pro Asn Pro	Leu Val Trp His Leu	Glu Arg Ala			
11395	11400	11405				
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Glu Thr	Ala Ala Thr Ala Glu	Arg Pro Phe Gly Val	Ser Leu Leu			
11410	11415	11420				
ccc gct	cgc cca aca gtc ccc	aag aat act att ctg	gaa cat aaa			66655
Pro Ala	Arg Pro Thr Val Pro	Lys Asn Thr Ile Leu	Glu His Lys			
11425	11430	11435				



gcg cat	ttt gct aca tgg gat	gcc ctt gcc cga cat	act ttt ttt	66700
Ala His	Phe Ala Thr Trp Asp	Ala Leu Ala Arg His	Thr Phe Phe	
11440	11445	11450		
tct gcc	gaa gca att atc acc	aac tca acg ttg aga	ata cac gtt	66745
Ser Ala	Glu Ala Ile Ile Thr	Asn Ser Thr Leu Arg	Ile His Val	
11455	11460	11465		
ccc ctt	ttt ggg tcg gta tgg	cca att cga tac tgg	gcc acc ggt	66790
Pro Leu	Phe Gly Ser Val Trp	Pro Ile Arg Tyr Trp	Ala Thr Gly	
11470	11475	11480		
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Ser Val	Leu Leu Thr Ser Asp	Ser Gly Arg Val Glu	Val Asn Ile	
11485	11490	11495		
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Gly Val	Gly Phe Met Ser Ser	Leu Ile Ser Leu Ser	Ser Gly Pro	
11500	11505	11510		
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Pro Ile	Glu Leu Ile Val Val	Pro His Thr Val Lys	Leu Asn Ala	
11515	11520	11525		
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Val Thr	Ser Asp Thr Thr Trp	Phe Gln Leu Asn Pro	Pro Gly Pro	
11530	11535	11540		
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Asp Pro	Gly Pro Ser Tyr Arg	Val Tyr Leu Leu Gly	Arg Gly Leu	
11545	11550	11555		
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Asp Met	Asn Phe Ser Lys His	Ala Thr Val Asp Ile	Cys Ala Tyr	
11560	11565	11570		
ccc gaa	gag agt ttg gat tac	cgc tat cat tta tcc	atg gcc cac	67105
Pro Glu	Glu Ser Leu Asp Tyr	Arg Tyr His Leu Ser	Met Ala His	
11575	11580	11585		
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Thr Glu	Ala Leu Arg Met Thr	Thr Lys Ala Asp Gln	His Asp Ile	
11590	11595	11600		
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Asn Glu	Glu Ser Tyr Tyr His	Ile Ala Ala Arg Ile	Ala Thr Ser	
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Ile Phe	Ala Leu Ser Glu Met	Gly Arg Thr Thr Glu	Tyr Phe Leu	
11620	11625	11630		
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Leu Asp	Glu Ile Val Asp Val	Gln Tyr Gln Leu Lys	Phe Leu Asn	
11635	11640	11645		
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Tyr Ile	Leu Met Arg Ile Gly	Ala Gly Ala His Pro	Asn Thr Ile	
11650	11655	11660		



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Ser Gly	Thr Ser Asp Leu Ile	Phe Ala Asp Pro Ser	Gln Leu His	
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Asp Glu	Leu Ser Leu Leu Phe	Gly Gln Val Lys Pro	Ala Asn Val	
11680	11685	11690		
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Asp Tyr	Phe Ile Ser Tyr Asp	Glu Ala Arg Asp Gln	Leu Lys Thr	
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Ala Tyr	Ala Leu Ser Arg Gly	Gln Asp His Val Asn	Ala Leu Ser	
11710	11715	11720		
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Leu Ala	Arg Arg Val Ile Met	Ser Ile Tyr Lys Gly	Leu Leu Val	
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Lys Gln	Asn Leu Asn Ala Thr	Glu Arg Gln Ala Leu	Phe Phe Ala	
11740	11745	11750		
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Ser Met	Ile Leu Leu Asn Phe	Arg Glu Gly Leu Glu	Asn Ser Ser	
11755	11760	11765		
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Arg Val	Leu Asp Gly Arg Thr	Thr Leu Leu Leu Met	Thr Ser Met	
11770	11775	11780		
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Cys Thr	Ala Ala His Ala Thr	Gln Ala Ala Leu Asn	Ile Gln Glu	
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Gly Leu	Ala Tyr Leu Asn Pro	Ser Lys His Met Phe	Thr Ile Pro	
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Asn Val	Tyr Ser Pro Cys Met	Gly Ser Leu Arg Thr	Asp Leu Thr	
11815	11820	11825		
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Glu Glu	Ile His Val Met Asn	Leu Leu Ser Ala Ile	Pro Thr Arg	
11830	11835	11840		
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Pro Gly	Leu Asn Glu Val Leu	His Thr Gln Leu Asp	Glu Ser Glu	
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Ile Phe	Asp Ala Ala Phe Lys	Thr Met Met Ile Phe	Thr Thr Trp	
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Thr Ala	Lys Asp Leu His Ile	Leu His Thr His Val	Pro Glu Val	
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Phe Thr	Cys Gln Asp Ala Ala	Ala Arg Asn Gly Glu	Tyr Val Leu	
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Ile Leu	Pro Ala Val Gln Gly	His Ser Tyr Val Ile	Thr Arg Asn	
11905	11910	11915		
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Lys Pro	Gln Arg Gly Leu Val	Tyr Ser Leu Ala Asp	Val Asp Val	
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Tyr Asn	Pro Ile Ser Val Val	Tyr Leu Ser Arg Asp	Thr Cys Val	
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Ser Glu	His Gly Val Ile Glu	Thr Val Ala Leu Pro	His Pro Asp	
11950	11955	11960		
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Asn Leu	Lys Glu Cys Leu Tyr	Cys Gly Ser Val Phe	Leu Arg Tyr	
11965	11970	11975		
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Leu Thr	Thr Gly Ala Ile Met	Asp Ile Ile Ile Ile	Asp Ser Lys	
11980	11985	11990		
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Asp Thr	Glu Arg Gln Leu Ala	Ala Met Gly Asn Ser	Thr Ile Pro	
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Pro Phe	Asn Pro Asp Met His	Gly Asp Asp Ser Lys	Ala Val Leu	
12010	12015	12020		
ttg ttt	cca aac gga act gtg	gta acg ctt cta gga	ttc gaa cga	68455
Leu Phe	Pro Asn Gly Thr Val	Val Thr Leu Leu Gly	Phe Glu Arg	
12025	12030	12035		
cga caa	gcc ata cga atg tcg	gga caa tac ctt ggg	gcc tct tta	68500
Arg Gln	Ala Ile Arg Met Ser	Gly Gln Tyr Leu Gly	Ala Ser Leu	
12040	12045	12050		
gga ggg	gcg ttt ctg gcg gta	gtg ggg ttt ggt att	atc gga tgg	68545
Gly Gly	Ala Phe Leu Ala Val	Val Gly Phe Gly Ile	Ile Gly Trp	
12055	12060	12065		
atg tta	tgt gga aat tcc cgc	ctt cga gaa tat aat	aaa ata cct	68590
Met Leu	Cys Gly Asn Ser Arg	Leu Arg Glu Tyr Asn	Lys Ile Pro	
12070	12075	12080		
ctg aca	taa aaaacatgta taataaaaag	tcactataaa cgtattctct		68639
Leu Thr				
12085				
acaatacttt attcgcgaaat aatacacact acctttgggt ttttttcccg tccccaaatg				68699
gtgttttggtg cactctacca aaaaatagag cgcttaaata tgctatataa cgctcccg				68759



caaaatacgg	ttcaaaggca	ttacccgata	ttgtattgta	gtacagggca	atgggaattg	68819
atgatcccaa	taaacggcat	agacgcacag	cgccgttata	gcaggggtct	ccagagtaca	68879
gggtatctaa	gtaccgggat	atctcatact	catgcctttc	cgtgacagaa	acatcaaccg	68939
gaacagtatc	cgataaacca	actcctgttt	ttgcaaggcg	taaaattcgc	acaccttcct	68999
tttttgcaag	atgtgacgtt	tccttgtaac	aggggaagctg	ggggagtggg	aagaacaaca	69059
aagtttcagc	caacgtgcca	ataaagccca	cttcctctca	gaggctgttt	gctgtatcca	69119
caatggtccg	tattaaatct	tgagcaactt	gatccgtgtc	atcatcactg	ggtaacgcgt	69179
taacataact	acgcgttaaa	tcttcaataa	cggcataaca	attaaacgct	tcccaccgag	69239
acagtatata	ttgaacaatc	acgaaccgtt	gacaggacgt	cagatcacgt	ccgtaagcat	69299
gcccgaaaaa	tggaagttcc	ccccgttcgc	catataccgc	aacaactgca	gtatatatcg	69359
tctcacgggc	ttcattaagt	tcattcttcaa	gtccaggcca	ttttctggct	ttaaataataa	69419
cctcgtccgc	aaaaaaaaacc	gcacatgata	acgcgcggat	acaatgagta	gtggctttat	69479
ggcgaggatc	ccaaatgtcc	attacccggg	ggatggtcct	aatctgtaca	aagttactta	69539
gtgtaatatg	atcggacttc	ttacgccgtc	taggctgttt	ctcagaatac	ggttcacccg	69599
aaatcggcac	atcatctgct	tttacgtctt	ccgtaaccac	atcagcagcg	cgccgactaa	69659
caattatact	tgttttttca	tcgtcgttac	ttccgttaag	cgcgctctcg	atctcggggc	69719
tcccgtcgaa	taatccactc	actagctcct	gcaaactttc	tggttaactcc	aacatacgca	69779
tatacaccaa	tgaaaaactg	gcttcgtttg	gtacgtacat	aaagccattt	gtgggtattaa	69839
tggcgggtggg	tgttggaaac	aatttttagct	tattctcgcg	cgtaacatct	acccccgcca	69899
ccaatgttaa	atgcgtcacg	gggagggaca	cgagataatc	tgcgagcgta	gggtcctcca	69959
cttcaacatc	aaatgttccg	caaaggctgc	gatccaccgc	ccccgatccc	gctgcaagta	70019
aggccactcg	atccaaaaac	acgcagttat	tattggatga	taccgcccac	gtcttccccg	70079
tgcgattgag	ctcacttcga	acgtaactgg	caacagatct	gtcaccgggt	ccgaccccg	70139
gaacaacatg	tccaaatttt	gcgatctcgc	ctccatgttt	gcgggggatg	gaaattaagc	70199
atcccccgca	tataaaatac	gccctggtag	cacgctcggt	aaaataaaac	gttacgccgt	70259
tataagatac	ggttgaatga	tatggaaatt	ccatattaaa	gcgtttatcg	gaacattaac	70319
ctcgaacttg	ccgtcccgtg	atcgtgtgat	cgccaacctt	aggtccacac	cgaatatgag	70379
aaatatataa	ctacacgcaa	acattcaaaa	caccgtggta	tcattaacgt	catatgaaaa	70439
gatccaatca	atccaatcaa	ccacacctcc	taccgttttag	cacgtcagct	atgtgacatg	70499
ctccaaacat	acgtaaacad	ttagagaggg	tgttataaca	gtctgtcagg	cgggggtatat	70559



tctacataat	acaaggatcg	gctttaactt	tgtcaacatt	tttactttgg	actataaact	70619
gcgactgaac	ggt atg aac cca ccc caa	gcc cgc gtc tcg gaa	cag			70665
	Met Asn Pro Pro Gln	Ala Arg Val Ser Glu	Gln			
	12090		12095			
aca aag gac ttg	ctt agc gtt atg gtt	aac cag cac ccc gaa	gag			70710
Thr Lys Asp Leu	Leu Ser Val Met Val	Asn Gln His Pro Glu	Glu			
	12100	12105	12110			
gac gca aaa gtg	tgt aaa tcc agt gat	aat tca ccg ctt tat	aac			70755
Asp Ala Lys Val	Cys Lys Ser Ser Asp	Asn Ser Pro Leu Tyr	Asn			
	12115	12120	12125			
acc atg gtt atg	tta tcg tat ggg ggt	gat acg gac tta cta	tta			70800
Thr Met Val Met	Leu Ser Tyr Gly Gly	Asp Thr Asp Leu Leu	Leu			
	12130	12135	12140			
agc tct gca tgt	acc cgc aca tct acc	gta aac agg tcg gcg	ttt			70845
Ser Ser Ala Cys	Thr Arg Thr Ser Thr	Val Asn Arg Ser Ala	Phe			
	12145	12150	12155			
acg caa cac tcc	gtg ttt tat att ata	tcc acg gtg ttg att	caa			70890
Thr Gln His Ser	Val Phe Tyr Ile Ile	Ser Thr Val Leu Ile	Gln			
	12160	12165	12170			
cca ata tgt tgt	atc ttc ttt ttt ttt	tac tat aaa gcg aca	cgc			70935
Pro Ile Cys Cys	Ile Phe Phe Phe Phe	Tyr Tyr Lys Ala Thr	Arg			
	12175	12180	12185			
tgt atg ctc tta	ttc aca gcc ggg tta	ctt ctg acg att cta	cat			70980
Cys Met Leu Leu	Phe Thr Ala Gly Leu	Leu Leu Thr Ile Leu	His			
	12190	12195	12200			
cac ttt cga ctt	att att atg tta ttg	tgt gtc tac aga aat	ata			71025
His Phe Arg Leu	Ile Ile Met Leu Leu	Cys Val Tyr Arg Asn	Ile			
	12205	12210	12215			
cga tca gac ctg	cta ccc tta tct aca	tcc cag caa ctg ctg	ctt			71070
Arg Ser Asp Leu	Leu Pro Leu Ser Thr	Ser Gln Gln Leu Leu	Leu			
	12220	12225	12230			
gga att att gtt	gtg act cga aca atg	cta ttt tgt att acg	gcg			71115
Gly Ile Ile Val	Val Thr Arg Thr Met	Leu Phe Cys Ile Thr	Ala			
	12235	12240	12245			
tat tat act ctt	ttt ata gac acc cgg	gtg ttc ttt ttg att	acc			71160
Tyr Tyr Thr Leu	Phe Ile Asp Thr Arg	Val Phe Phe Leu Ile	Thr			
	12250	12255	12260			
gga cac ttg caa	agt gag gtt att ttt	cca gat agc gtt tca	aaa			71205
Gly His Leu Gln	Ser Glu Val Ile Phe	Pro Asp Ser Val Ser	Lys			
	12265	12270	12275			
ata ctt cct gtg	tcg tgg ggt cca agt	cca gcc gtg tta ctg	gta			71250
Ile Leu Pro Val	Ser Trp Gly Pro Ser	Pro Ala Val Leu Leu	Val			
	12280	12285	12290			
atg gcg gca gtt	att tac gct atg gac	tgt ttg gtg gac acg	gta			71295
Met Ala Ala Val	Ile Tyr Ala Met Asp	Cys Leu Val Asp Thr	Val			



12295	12300	12305	
tcc ttt att ggg cca agg gtg tgg gtc cgt gtt atg tta aaa aca	71340		
Ser Phe Ile Gly Pro Arg Val Trp Val Arg Val Met Leu Lys Thr			
12310	12315	12320	
tct att tcg ttt tag tccatttcaa taaatgtact ataattgttc agtctaaaaa	71395		
Ser Ile Ser Phe			
12325			
taatgttggg tattttataat taccgcccc gtgttacttg gaaacaccca tacatatgtt	71455		
ccactctaca tcaaacttct cgcagttttc ttgttcccgc acacgtttac acgtccggat	71515		
tcaagtcgca acgctgctga caaa atg aca acg gtt tca tgt ccc gct aac	71566		
Met Thr Thr Val Ser Cys Pro Ala Asn			
12330			
gtg att act aca acg gaa tct gat cgt att gct ggg tta ttt aac	71611		
Val Ile Thr Thr Thr Glu Ser Asp Arg Ile Ala Gly Leu Phe Asn			
12335	12340	12345	
atc cca gcg ggg atc att cca act gga aat gtg ctg tca acc ata	71656		
Ile Pro Ala Gly Ile Ile Pro Thr Gly Asn Val Leu Ser Thr Ile			
12350	12355	12360	
gag gtg tgt gca cac cgt tgc att ttt gat ttt ttt aaa caa ata	71701		
Glu Val Cys Ala His Arg Cys Ile Phe Asp Phe Phe Lys Gln Ile			
12365	12370	12375	
cga tca gat gat aac agc ctt tac tcg gct caa ttc gat att ctt	71746		
Arg Ser Asp Asp Asn Ser Leu Tyr Ser Ala Gln Phe Asp Ile Leu			
12380	12385	12390	
ttg ggg aca tac tgc aat aca tta aac ttt gtg cgt ttt cta gaa	71791		
Leu Gly Thr Tyr Cys Asn Thr Leu Asn Phe Val Arg Phe Leu Glu			
12395	12400	12405	
ctt gga ctg tct gtc gct tgc atc tgt act aaa ttt ccg gag ctg	71836		
Leu Gly Leu Ser Val Ala Cys Ile Cys Thr Lys Phe Pro Glu Leu			
12410	12415	12420	
gct tac gtg cga gat ggc gtt att caa ttt gag gta caa caa ccc	71881		
Ala Tyr Val Arg Asp Gly Val Ile Gln Phe Glu Val Gln Gln Pro			
12425	12430	12435	
atg ata gca cgt gat ggc cca cat ccc gtc gat cag cct gtt cat	71926		
Met Ile Ala Arg Asp Gly Pro His Pro Val Asp Gln Pro Val His			
12440	12445	12450	
aat tat atg gtt aag cgg ata cac aag cgt tcg tta agc gct gcg	71971		
Asn Tyr Met Val Lys Arg Ile His Lys Arg Ser Leu Ser Ala Ala			
12455	12460	12465	
ttt gca att gca tcg gaa gcg ttg agt ttg tta agt aac aca tat	72016		
Phe Ala Ile Ala Ser Glu Ala Leu Ser Leu Leu Ser Asn Thr Tyr			
12470	12475	12480	
gtc gat ggg aca gag att gac tca tcg tta cgt ata aga gct atc	72061		
Val Asp Gly Thr Glu Ile Asp Ser Ser Leu Arg Ile Arg Ala Ile			



12485		12490		12495	
caa Gln 12500	cag Gln Met	gct Ala Arg	cgt Asn 12505	tta Leu Arg	acc Thr Val
				gtt Leu 12510	ttg Leu 12510
					gac Asp Ser
					tca Phe Glu
					72106
cga Arg 12515	ggc Gly Thr	gcc Ala Asp	gat Gln 12520	caa Leu Leu	ctt Leu Gly
				ggt Val 12525	gtt Leu 12525
				cta Leu 12525	ttg Leu Glu
					aaa Lys Ala
					72151
cca Pro 12530	ccg Pro Leu	cta Ser Leu	ctg Leu 12535	tca Ser Pro	att Ile Asn
				aat Lys 12540	aaa Lys 12540
					ttc Phe Gln
					ccc Pro Glu
					72196
gga Gly 12545	cat His Leu	cta Asn Arg	cgt Val 12550	gtt Ala Arg	gca Ala Arg
				gca Ala Arg	gcg Ala Ala
				gcc Ala Ala	cta Leu 12555
					ctt Leu Ser
					tcg Asp Leu
					72241
aaa Lys 12560	cgt Arg Arg	aga Val Cys	gtc Cys 12565	gca Ala 12565	gat Asp Met
				atg Phe Phe	ttt Phe Met
				ttt Met 12570	atg Met 12570
					acc Thr Arg
					cga His Ala
					72286
agg Arg 12575	gaa Glu Pro	cct Arg Leu	ctg Leu 12580	atc Ile 12580	tct Ser Ala
					gca Tyr Leu
					ctg Leu 12585
					tcg Ser 12585
					gat Asp Met
					atg Val Ser
					72331
tgc Cys 12590	acc Thr Gln	caa Pro Ser	tcg Ser Val	gtg Val 12595	atg Met Val
					tca Ser Arg
					cga Arg Ile
					ata Ile 12600
					act Thr His
					aca Thr Asn
					72376
act Thr 12605	cgc Arg Gly	gga Arg Gln	cag Gln Val	gtt Val 12610	gac Asp Gly
					ggt Val Leu
					gtg Val 12615
					ttg Leu 12615
					gta Val 12615
					aca Thr Ala
					acc Thr 72421
tta Leu 12620	aaa Lys Arg	cgg Gln Leu	cta Leu 12625	tta Leu 12625	cag Gln Gly
					att Ile Leu
					caa Gln 12630
					att Ile Asp
					gac Asp Thr
					72466
gcc Ala 12635	gct Ala Asp	gta Val Pro	cca Pro Val	gta Val 12640	aca Thr Tyr
					tat Gly Glu
					ggc Glu Met
					atg Met 12645
					gtt Val Leu
					cta Gln Gly
					72511
aca Thr 12650	aac Asn Leu	ttg Val Thr	acc Ala 12655	gcc Ala 12655	ctt Leu Val
					gtg Met Gly
					aag Lys 12660
					gcc Ala Val
					gtc Arg Gly
					72556
atg Met 12665	gat Asp Asp	gta Val Ala	gcc Ala Arg	cgc Arg 12670	cat His Leu
					ctc Leu Leu
					ctt Leu Asp
					gat Ile 12675
					ata Ile 12675
					acc Thr Asp
					cct Pro Asn
					72601
acg Thr 12680	tta Leu Asn	ata Ile Pro	ccg Pro Ser	tct Ser 12685	ata Ile Pro
					ccc Pro Pro
					cca Gln Ser
					caa Gln 12690
					tcc Ser 12690
					aac Asn Ser
					tcc Ser Asp
					tca Ser 72646
acg Thr 12695	aca Thr Ala	gct Gly Leu	ctt Leu Pro	ccg Pro 12700	gtt Val Asn
					aac Ala Arg
					gcc Ala Val
					cgt Arg 12705
					gtt Val 12705
					cct Pro Ala
					gcg Asp Leu
					72691
gtg Val	att Ile	gtt Val	ggg Gly	gat Asp	aaa Lys
					ctt Leu
					gta Val
					ttc Phe
					tta Leu
					gaa Glu
					gca Ala
					tta Leu
					gaa Glu
					cgg Arg
					72736



12710		12715		12720	
cgg	gtc tac caa gct acg	cgc gtt gcc tac cct	ctt att gga aat	72781	
Arg	Val Tyr Gln Ala Thr	Arg Val Ala Tyr Pro	Leu Ile Gly Asn		
12725	12730	12735			
ata	gat att acg ttt atc	atg cca atg gga gtg	ttt cag gca aac	72826	
Ile	Asp Ile Thr Phe Ile	Met Pro Met Gly Val	Phe Gln Ala Asn		
12740	12745	12750			
tcc	atg gac aga tat aca	cga cac gcc ggc gat	ttt tca act gta	72871	
Ser	Met Asp Arg Tyr Thr	Arg His Ala Gly Asp	Phe Ser Thr Val		
12755	12760	12765			
tcc	gaa cag gat cca cgt	caa ttt cca ccc caa	ggg att ttt ttt	72916	
Ser	Glu Gln Asp Pro Arg	Gln Phe Pro Pro Gln	Gly Ile Phe Phe		
12770	12775	12780			
tat	aat aaa gat ggg ata	tta aca cag ttg act	ctt cgt gat gca	72961	
Tyr	Asn Lys Asp Gly Ile	Leu Thr Gln Leu Thr	Leu Arg Asp Ala		
12785	12790	12795			
atg	ggg acc atc tgc cac	agt tca ttg ctt gat	gtc gag gcc aca	73006	
Met	Gly Thr Ile Cys His	Ser Ser Leu Leu Asp	Val Glu Ala Thr		
12800	12805	12810			
ctt	gtt gcc ctc cgc caa	caa cat tta gat cgt	cag tgt tat ttt	73051	
Leu	Val Ala Leu Arg Gln	Gln His Leu Asp Arg	Gln Cys Tyr Phe		
12815	12820	12825			
ggg	gta tac gtg gcc gag	ggg aca gag gac aca	ttg gat gtt caa	73096	
Gly	Val Tyr Val Ala Glu	Gly Thr Glu Asp Thr	Leu Asp Val Gln		
12830	12835	12840			
atg	ggg agg ttt atg gaa	acg tgg gca gat atg	atg cct cat cac	73141	
Met	Gly Arg Phe Met Glu	Thr Trp Ala Asp Met	Met Pro His His		
12845	12850	12855			
cct	cat tgg gta aac gaa	cat tta aca att cta	cag ttt ata gct	73186	
Pro	His Trp Val Asn Glu	His Leu Thr Ile Leu	Gln Phe Ile Ala		
12860	12865	12870			
ccg	agc aac ccg cgt cta	agg ttt gaa tta aac	ccc gcc ttt gat	73231	
Pro	Ser Asn Pro Arg Leu	Arg Phe Glu Leu Asn	Pro Ala Phe Asp		
12875	12880	12885			
ttt	ttt gtt gca ccg ggg	gac gta gac ctt ccc	gga ccg cag cgt	73276	
Phe	Phe Val Ala Pro Gly	Asp Val Asp Leu Pro	Gly Pro Gln Arg		
12890	12895	12900			
ccc	ccg gaa gcc atg cca	acc gtt aac gca aca	tta cgg att atc	73321	
Pro	Pro Glu Ala Met Pro	Thr Val Asn Ala Thr	Leu Arg Ile Ile		
12905	12910	12915			
aac	gga aac att ccc gtg	cct cta tgt ccc att	tca ttt cga gac	73366	
Asn	Gly Asn Ile Pro Val	Pro Leu Cys Pro Ile	Ser Phe Arg Asp		
12920	12925	12930			
tgt	cgc gga acc caa ctc	ggg ttg gga aga cat	aca atg acc ccg	73411	
Cys	Arg Gly Thr Gln Leu	Gly Leu Gly Arg His	Thr Met Thr Pro		



12935		12940		12945	
gca Ala 12950	acc Thr 12950	att Ile 12950	aaa Lys 12950	gcc Ala 12955	gta Val 12955
	aag Lys 12955	gat Asp 12955	aca Thr 12960	ttt Phe 12960	gaa Glu 12960
	gac Asp 12960	cgc Arg 12960	gca Ala 12960	tac Tyr 12960	73456
cca Pro 12965	act Thr 12965	att Ile 12965	ttc Phe 12970	tac Tyr 12970	atg Met 12970
	cta Leu 12970	gag Glu 12970	gct Ala 12975	gtt Val 12975	att Ile 12975
	cat His 12975	gga Gly 12975	aac Asn 12975	gaa Glu 12975	73501
aga Arg 12980	aac Asn 12980	ttc Phe 12985	tgt Cys 12985	gcg Ala 12985	tta Leu 12985
	ctg Leu 12985	cga Arg 12990	ctg Leu 12990	tta Leu 12990	aca Thr 12990
	cag Gln 12990	tgt Cys 12990	att Ile 12990	cgc Arg 12990	73546
ggg Gly 12995	tat Tyr 12995	tgg Trp 12995	gag Glu 13000	caa Gln 13000	tcc Ser 13000
	cac His 13000	agg Arg 13005	gtg Val 13005	gca Ala 13005	ttt Phe 13005
	gta Val 13005	aat Asn 13005	aac Asn 13005	ttt Phe 13005	73591
cac His 13010	atg Met 13010	tta Leu 13015	atg Met 13015	tac Tyr 13015	ata Ile 13015
	act Thr 13015	aca Thr 13020	tat Tyr 13020	ctc Leu 13020	gga Gly 13020
	aac Asn 13020	ggt Gly 13020	gag Glu 13020	ctt Leu 13020	73636
ccc Pro 13025	gaa Glu 13025	gtc Val 13030	tgt Cys 13030	att Ile 13030	aat Asn 13030
	ata Ile 13030	tat Tyr 13035	cgg Arg 13035	gat Asp 13035	tta Leu 13035
	ctg Leu 13035	cag Gln 13035	cat His 13035	gta Val 13035	73681
aga Arg 13040	gca Ala 13040	tta Leu 13045	cgc Arg 13045	caa Gln 13045	act Thr 13045
	ata Ile 13045	acc Thr 13050	gat Asp 13050	ttt Phe 13050	aca Thr 13050
	ata Ile 13050	caa Gln 13050	gga Gly 13050	gag Glu 13050	73726
ggc Gly 13055	cat His 13055	aac Asn 13060	ggc Gly 13060	gag Glu 13060	acc Thr 13060
	tcg Ser 13060	gaa Glu 13065	gcg Ala 13065	cta Leu 13065	aat Asn 13065
	aac Asn 13065	atc Ile 13065	ctt Leu 13065	acg Thr 13065	73771
gat Asp 13070	gac Asp 13070	acg Thr 13075	ttt Phe 13075	att Ile 13075	gca Ala 13075
	cct Pro 13075	att Ile 13080	cta Leu 13080	tgg Trp 13080	gat Asp 13080
	tgt Cys 13080	gat Asp 13080	gcg Ala 13080	tta Leu 13080	73816
ata Ile 13085	tac Tyr 13085	cgt Arg 13090	gat Asp 13090	gaa Glu 13090	gcc Ala 13090
	gcc Ala 13090	cga Arg 13095	gac Asp 13095	cga Arg 13095	ctc Leu 13095
	ccc Pro 13095	gca Ala 13095	att Ile 13095	cgt Arg 13095	73861
gta Val 13100	agc Ser 13100	ggg Gly 13105	cga Arg 13105	aac Asn 13105	gga Gly 13105
	tac Tyr 13105	caa Gln 13110	gcc Ala 13110	ctt Leu 13110	cac His 13110
	ttt Phe 13110	gtg Val 13110	gat Asp 13110	atg Met 13110	73906
gcc Ala 13115	ggg Gly 13115	cat His 13120	aac Asn 13120	ttc Phe 13120	caa Gln 13120
	cga Arg 13120	cgc Arg 13125	gat Asp 13125	aat Asn 13125	gtg Val 13125
	tta Leu 13125	atc Ile 13125	cac His 13125	ggg Gly 13125	73951
aga Arg 13130	ccc Pro 13130	gtt Val 13135	cgg Arg 13135	gga Gly 13135	gac Asp 13135
	acg Thr 13135	ggt Gly 13140	cag Gln 13140	ggt Gly 13140	att Ile 13140
	ccc Pro 13140	att Ile 13140	act Thr 13140	cca Pro 13140	73996
cac His 13145	cat His 13145	gac Asp 13150	cgt Arg 13150	gaa Glu 13150	tgg Trp 13150
	ggt Gly 13150	att Ile 13155	ctc Leu 13155	tcc Ser 13155	aag Lys 13155
	att Ile 13155	tac Tyr 13155	tac Tyr 13155	tat Tyr 13155	74041
att Ile 13155	gtc Val 13155	att Ile 13155	cct Pro 13155	gca Ala 13155	ttt Phe 13155
	tcc Ser 13155	cgc Arg 13155	ggt Gly 13155	tcc Ser 13155	tgt Cys 13155
	tgt Cys 13155	aca Thr 13155	atg Met 13155	ggc Gly 13155	74086



13160		13165		13170	
gtg	cgt tat gat cgc cta	tac cct gcg tta cag	gca gtt atc gtt	74131	
Val	Arg Tyr Asp Arg Leu	Tyr Pro Ala Leu Gln	Ala Val Ile Val		
13175		13180		13185	
ccg	gaa att ccc gct gat	gaa gaa gcc cca act	acc cca gaa gat	74176	
Pro	Glu Ile Pro Ala Asp	Glu Glu Ala Pro Thr	Thr Pro Glu Asp		
13190		13195		13200	
cca	aga cac cct ctt cac	gca cac caa ctc gtt	ccg aac tct ctt	74221	
Pro	Arg His Pro Leu His	Ala His Gln Leu Val	Pro Asn Ser Leu		
13205		13210		13215	
aac	gtt tac ttc cat aat	gca cac cta acc gtt	gat ggt gat gca	74266	
Asn	Val Tyr Phe His Asn	Ala His Leu Thr Val	Asp Gly Asp Ala		
13220		13225		13230	
ttg	ctc aca cta caa gag	tta atg gga gat atg	gct gaa cga acg	74311	
Leu	Leu Thr Leu Gln Glu	Leu Met Gly Asp Met	Ala Glu Arg Thr		
13235		13240		13245	
acg	gcc att tta gta tca	agc gcc ccc gat gcg	gga gcc gcc acg	74356	
Thr	Ala Ile Leu Val Ser	Ser Ala Pro Asp Ala	Gly Ala Ala Thr		
13250		13255		13260	
gca	aca acc aga aat atg	aga ata tat gac gga	gcg ctt tac cat	74401	
Ala	Thr Thr Arg Asn Met	Arg Ile Tyr Asp Gly	Ala Leu Tyr His		
13265		13270		13275	
ggc	ctt att atg atg gca	tat cag gcg tac gat	gaa acc att gca	74446	
Gly	Leu Ile Met Met Ala	Tyr Gln Ala Tyr Asp	Glu Thr Ile Ala		
13280		13285		13290	
acg	ggt act ttt ttt tat	ccc gtt ccg gtc aac	cct ctg ttt gca	74491	
Thr	Gly Thr Phe Phe Tyr	Pro Val Pro Val Asn	Pro Leu Phe Ala		
13295		13300		13305	
tgt	ccg gaa cat ttg gca	tca ttg cgt gga atg	aca aat gct agg	74536	
Cys	Pro Glu His Leu Ala	Ser Leu Arg Gly Met	Thr Asn Ala Arg		
13310		13315		13320	
cgg	gtt ttg gca aaa atg	gta cca cca atc cct	cct ttt ctg gga	74581	
Arg	Val Leu Ala Lys Met	Val Pro Pro Ile Pro	Pro Phe Leu Gly		
13325		13330		13335	
gcc	aac cac cac gca act	ata cgc caa ccc gtt	gcc tac cat gta	74626	
Ala	Asn His His Ala Thr	Ile Arg Gln Pro Val	Ala Tyr His Val		
13340		13345		13350	
acg	cat agt aag tcg gat	ttt aat act ctt aca	tat tct ctt ctt	74671	
Thr	His Ser Lys Ser Asp	Phe Asn Thr Leu Thr	Tyr Ser Leu Leu		
13355		13360		13365	
gga	ggg tat ttt aag ttt	aca cca ata tct ctt	aca cat caa cta	74716	
Gly	Gly Tyr Phe Lys Phe	Thr Pro Ile Ser Leu	Thr His Gln Leu		
13370		13375		13380	
cga	acg gga ttt cac ccc	ggg att gcc ttt acc	gta gtg cgc cag	74761	
Arg	Thr Gly Phe His Pro	Gly Ile Ala Phe Thr	Val Val Arg Gln		



13385		13390		13395	
gat	cgc ttt gcc aca	gag	caa ctt tta tat	gcc	gag cgt gct tct
Asp	Arg Phe Ala Thr	Glu	Gln Leu Leu Tyr	Ala	Glu Arg Ala Ser
13400		13405		13410	74806
gaa	tcg tac ttt gtc	gga	caa atc caa gta	cac	cat cat gat gct
Glu	Ser Tyr Phe Val	Gly	Gln Ile Gln Val	His	His His Asp Ala
13415		13420		13425	74851
att	ggg ggg gta aac	ttt	acc cta acc caa	ccc	aga gct cac gtg
Ile	Gly Gly Val Asn	Phe	Thr Leu Thr Gln	Pro	Arg Ala His Val
13430		13435		13440	74896
gac	ctg gga gtc ggg	tat	aca gct gta tgt	gcc	aca gca gcc ctg
Asp	Leu Gly Val Gly	Tyr	Thr Ala Val Cys	Ala	Thr Ala Ala Leu
13445		13450		13455	74941
cga	tgc cct ctc acg	gat	atg ggc aat act	gcc	caa aat ctt ttt
Arg	Cys Pro Leu Thr	Asp	Met Gly Asn Thr	Ala	Gln Asn Leu Phe
13460		13465		13470	74986
ttt	tca cga gga gga	gtg	cca atg tta cat	gat	aac gtt acc gaa
Phe	Ser Arg Gly Gly	Val	Pro Met Leu His	Asp	Asn Val Thr Glu
13475		13480		13485	75031
tcg	ttg cgt cgt ata	aca	gca tcg ggg ggt	cgc	tta aat ccc acc
Ser	Leu Arg Arg Ile	Thr	Ala Ser Gly Gly	Arg	Leu Asn Pro Thr
13490		13495		13500	75076
gaa	ccc cta ccc atc	ttc	ggc gga cta cgt	cct	gct aca tcg gca
Glu	Pro Leu Pro Ile	Phe	Gly Gly Leu Arg	Pro	Ala Thr Ser Ala
13505		13510		13515	75121
gga	att gca cga ggg	caa	gcc tct gtg tgt	gag	ttt gtg gcc atg
Gly	Ile Ala Arg Gly	Gln	Ala Ser Val Cys	Glu	Phe Val Ala Met
13520		13525		13530	75166
ccg	gtg tcc act gac	cta	caa tat ttt aga	act	gca tgc aat cct
Pro	Val Ser Thr Asp	Leu	Gln Tyr Phe Arg	Thr	Ala Cys Asn Pro
13535		13540		13545	75211
aga	ggg cga gca tct	gga	atg tta tat atg	ggg	gac cgt gac gcc
Arg	Gly Arg Ala Ser	Gly	Met Leu Tyr Met	Gly	Asp Arg Asp Ala
13550		13555		13560	75256
gac	ata gag gct ata	atg	ttt gat cac aca	caa	tcg gat gtt gct
Asp	Ile Glu Ala Ile	Met	Phe Asp His Thr	Gln	Ser Asp Val Ala
13565		13570		13575	75301
tat	aca gat cga gca	act	ctt aac cca tgg	gca	tca caa aaa cat
Tyr	Thr Asp Arg Ala	Thr	Leu Asn Pro Trp	Ala	Ser Gln Lys His
13580		13585		13590	75346
tca	tac ggt gac agg	cta	tac aac gga aca	tac	aac ctt aca ggc
Ser	Tyr Gly Asp Arg	Leu	Tyr Asn Gly Thr	Tyr	Asn Leu Thr Gly
13595		13600		13605	75391
gct	tct cct atc tac	agc	cca tgc ttt aag	ttt	ttt aca cca gcg
Ala	Ser Pro Ile Tyr	Ser	Pro Cys Phe Lys	Phe	Phe Thr Pro Ala
					75436



13610		13615		13620		
gag	gtt aac act aat tgt	aat aca ctg gat	cgg	ctt cta atg gag	75481	
Glu	Val Asn Thr Asn Cys	Asn Thr Leu Asp	Arg	Leu Leu Met Glu		
13625		13630		13635		
gca	aag gct gtg gcg tcg	caa agc tcc acc gac	act gaa tat caa	75526		
Ala	Lys Ala Val Ala Ser	Gln Ser Ser Thr Asp	Thr Glu Tyr Gln			
13640		13645		13650		
ttt	aaa cgc cct ccc ggt	tct acc gaa atg aca	cag gat ccg tgt	75571		
Phe	Lys Arg Pro Pro Gly	Ser Thr Glu Met Thr	Gln Asp Pro Cys			
13655		13660		13665		
ggc	ctt ttt caa gaa gca	tat cca cca cta tgc	tca agc gat gcg	75616		
Gly	Leu Phe Gln Glu Ala	Tyr Pro Pro Leu Cys	Ser Ser Asp Ala			
13670		13675		13680		
gcc	atg tta cga acg gct	cac gcg gga gaa acc	ggg gca gat gaa	75661		
Ala	Met Leu Arg Thr Ala	His Ala Gly Glu Thr	Gly Ala Asp Glu			
13685		13690		13695		
gtt	cac tta gcc caa tat	ctg att cga gac gcg	tcg ccc ctt agg	75706		
Val	His Leu Ala Gln Tyr	Leu Ile Arg Asp Ala	Ser Pro Leu Arg			
13700		13705		13710		
gga	tgt ctt cct ctt ccg	cga taa tttcaccacg	cccacatacc	75750		
Gly	Cys Leu Pro Leu Pro	Arg				
13715		13720				
cactcccaat	aaaagccctg	tagagcgc	at	tg	catctta cttgagattt ggatacgctc	75810
ggccgacttg	gtctgtttca	cgcttcctta	aacaac	atg gct atg cca	ttt gag	75864
				Met Ala Met Pro	Phe Glu	
					13725	
ata gag gta	ttg tta cca gga gaa	cta tcc ccg gcg gaa	aca tct	75909		
Ile Glu Val	Leu Leu Pro Gly Glu	Leu Ser Pro Ala Glu	Thr Ser			
	13730	13735	13740			
gca tta cag	aaa tgt gag gga aaa	att att acc ttc tca	acc ctg	75954		
Ala Leu Gln	Lys Cys Glu Gly Lys	Ile Ile Thr Phe Ser	Thr Leu			
	13745	13750	13755			
cgt cat cga	gct tca ctg gtg gat	ata gcg ctg tcg tca	tat tac	75999		
Arg His Arg	Ala Ser Leu Val Asp	Ile Ala Leu Ser Ser	Tyr Tyr			
	13760	13765	13770			
att aac ggt	gct cca cca gac acg	ctc tcg ctg tta gag	gca tac	76044		
Ile Asn Gly	Ala Pro Pro Asp Thr	Leu Ser Leu Leu Glu	Ala Tyr			
	13775	13780	13785			
cga atg cga	ttc gcg gca gtt ata	aca cgg gtc atc ccg	gga aag	76089		
Arg Met Arg	Phe Ala Ala Val Ile	Thr Arg Val Ile Pro	Gly Lys			
	13790	13795	13800			
ttg ttg gcg	cat gcc att ggc gtg	ggg act cct aca ccc	ggg ttg	76134		
Leu Leu Ala	His Ala Ile Gly Val	Gly Thr Pro Thr Pro	Gly Leu			
	13805	13810	13815			



ttt att caa	aat aca tcc ccc gtt	gat ctt tgt aat ggc	gat tac	76179
Phe Ile Gln	Asn Thr Ser Pro Val	Asp Leu Cys Asn Gly	Asp Tyr	
13820	13825	13830		
atc tgc tta	ctt cct ccg gtt ttc	ggg tcc gca gac tca	att cgc	76224
Ile Cys Leu	Leu Pro Pro Val Phe	Gly Ser Ala Asp Ser	Ile Arg	
13835	13840	13845		
ttg gac tct	gta gga ctg gaa att	gtt ttc cct tta acc	atc ccc	76269
Leu Asp Ser	Val Gly Leu Glu Ile	Val Phe Pro Leu Thr	Ile Pro	
13850	13855	13860		
cag acc tta	atg cga gaa atc atc	gcc aaa gtg gtt gca	cgg gcc	76314
Gln Thr Leu	Met Arg Glu Ile Ile	Ala Lys Val Val Ala	Arg Ala	
13865	13870	13875		
gtt gag cgc	acg gcc gcg ggt gct	caa att tta ccc cac	gaa gtt	76359
Val Glu Arg	Thr Ala Ala Gly Ala	Gln Ile Leu Pro His	Glu Val	
13880	13885	13890		
cta cga ggc	gcg gat gtc att tgt	tac aat gga agg cgt	tat gaa	76404
Leu Arg Gly	Ala Asp Val Ile Cys	Tyr Asn Gly Arg Arg	Tyr Glu	
13895	13900	13905		
ctc gaa aca	aat tta caa cat cgg	gac gga tcg gat gcg	gct att	76449
Leu Glu Thr	Asn Leu Gln His Arg	Asp Gly Ser Asp Ala	Ala Ile	
13910	13915	13920		
cgc aca ttg	gtt tta aat cta atg	ttt tcc ata aac gag	gga tgt	76494
Arg Thr Leu	Val Leu Asn Leu Met	Phe Ser Ile Asn Glu	Gly Cys	
13925	13930	13935		
ctg ctt tta	ttg gcg ctg att cca	act ttg tta gtc caa	gga gca	76539
Leu Leu Leu	Leu Ala Leu Ile Pro	Thr Leu Leu Val Gln	Gly Ala	
13940	13945	13950		
cac gac ggt	tat gta aat tta ttg	ata caa acg gcc aat	tgc gtt	76584
His Asp Gly	Tyr Val Asn Leu Leu	Ile Gln Thr Ala Asn	Cys Val	
13955	13960	13965		
aga gaa acc	ggc cag tta att aat	ata ccg cca atg ccg	cgg att	76629
Arg Glu Thr	Gly Gln Leu Ile Asn	Ile Pro Pro Met Pro	Arg Ile	
13970	13975	13980		
caa gac ggc	cat cgc cga ttt ccc	ata tat gaa act att	tca tct	76674
Gln Asp Gly	His Arg Arg Phe Pro	Ile Tyr Glu Thr Ile	Ser Ser	
13985	13990	13995		
tgg ata tca	aca tca tct aga ctg	ggg gat acc ttg gga	act cgc	76719
Trp Ile Ser	Thr Ser Ser Arg Leu	Gly Asp Thr Leu Gly	Thr Arg	
14000	14005	14010		
gca att tta	cgc gtc tgt gtg ttt	gat gga ccc tct act	gtt cat	76764
Ala Ile Leu	Arg Val Cys Val Phe	Asp Gly Pro Ser Thr	Val His	
14015	14020	14025		
ccg gga gac	cgc acg gcc gtg att	caa gtg taa acaggtgta		76807
Pro Gly Asp	Arg Thr Ala Val Ile	Gln Val		
14030	14035			



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gatcatctga cattgttccc gtggtacctt taccctgtga agtttttgtg tctagattac	76987
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ccaccaaagt ttaaagtgtat ccttaaatac cacgtacgta aaaaatgttt gaatacgtac	78127
atatttcttt tttttttcca gtacaaccat atccggtgta ta atg gaa gcc cat	78181
	Met Glu Ala His
	14040
ttg gca aat gaa acc aaa cat gca ctt tgg cat aat gat cac aca	78226
Leu Ala Asn Glu Thr Lys His Ala Leu Trp His Asn Asp His Thr	
	14045 14050 14055
aaa gga tta cta cac gtt gtg ata cct aac gcg ggg ctt att gcg	78271
Lys Gly Leu Leu His Val Val Ile Pro Asn Ala Gly Leu Ile Ala	
	14060 14065 14070
gcc gga ata gat ccc gca tta ctg att tta aag aaa ccc gga caa	78316
Ala Gly Ile Asp Pro Ala Leu Leu Ile Leu Lys Lys Pro Gly Gln	
	14075 14080 14085



cgc ttc aag gtt	gaa gta caa aca aga	tat cat gct aca ggt	caa	78361
Arg Phe Lys Val	Glu Val Gln Thr Arg	Tyr His Ala Thr Gly	Gln	
14090	14095	14100		
tgc gaa ccg tgg	tgt caa gtt ttc gcc	gcg tac att ccc gat	aac	78406
Cys Glu Pro Trp	Cys Gln Val Phe Ala	Ala Tyr Ile Pro Asp	Asn	
14105	14110	14115		
gcc tta aca aat	ctc tta ata cca aaa	acg gaa cca ttt gtt	tca	78451
Ala Leu Thr Asn	Leu Leu Ile Pro Lys	Thr Glu Pro Phe Val	Ser	
14120	14125	14130		
cac gtt ttt tcg	gcc acg cat aat tca	ggg gga ttg att tta	tca	78496
His Val Phe Ser	Ala Thr His Asn Ser	Gly Gly Leu Ile Leu	Ser	
14135	14140	14145		
ttg cct gtt tat	ctt agc ccc ggt tta	ttc ttt gat gca ttt	aac	78541
Leu Pro Val Tyr	Leu Ser Pro Gly Leu	Phe Phe Asp Ala Phe	Asn	
14150	14155	14160		
gtt gta gcg ata	cga ata aat act gga	aac cgc aag cac cgt	gat	78586
Val Val Ala Ile	Arg Ile Asn Thr Gly	Asn Arg Lys His Arg	Asp	
14165	14170	14175		
att tgt att atg	tat gca gaa cta atc	cca aac gga acg cgt	tat	78631
Ile Cys Ile Met	Tyr Ala Glu Leu Ile	Pro Asn Gly Thr Arg	Tyr	
14180	14185	14190		
ttt gct gat gga	caa cgg gta ctt tta	tta tgc aaa cag ctg	att	78676
Phe Ala Asp Gly	Gln Arg Val Leu Leu	Leu Cys Lys Gln Leu	Ile	
14195	14200	14205		
gcg tat atc cga	tgc acc cct cgt ctt	gca tcg tct ata aaa	ata	78721
Ala Tyr Ile Arg	Cys Thr Pro Arg Leu	Ala Ser Ser Ile Lys	Ile	
14210	14215	14220		
tac gca gag cat	atg gtg gca gcc atg	ggg gaa tca cac acg	tca	78766
Tyr Ala Glu His	Met Val Ala Ala Met	Gly Glu Ser His Thr	Ser	
14225	14230	14235		
aat ggg gac aat	att gga ccc gtt tca	tcc ata atc gat ctt	gat	78811
Asn Gly Asp Asn	Ile Gly Pro Val Ser	Ser Ile Ile Asp Leu	Asp	
14240	14245	14250		
cga cag tta act	tct gga ggt att gat	gac tcc cct gct gaa	aca	78856
Arg Gln Leu Thr	Ser Gly Gly Ile Asp	Asp Ser Pro Ala Glu	Thr	
14255	14260	14265		
cgc ata cag gaa	aat aat cgg gac gtc	ctt gag cta ata aaa	cgg	78901
Arg Ile Gln Glu	Asn Asn Arg Asp Val	Leu Glu Leu Ile Lys	Arg	
14270	14275	14280		
gcc gta aac att	gtt aac tcc agg cac	ccc gtc cga cct tct	agt	78946
Ala Val Asn Ile	Val Asn Ser Arg His	Pro Val Arg Pro Ser	Ser	
14285	14290	14295		
tcc cgc gtt gca	tct ggg ttg ctt caa	agt gca aag ggc cac	gga	78991
Ser Arg Val Ala	Ser Gly Leu Leu Gln	Ser Ala Lys Gly His	Gly	
14300	14305	14310		



gcg caa act tcc	aac aca gat ccg atc	aat aac ggt tcc ttt	gat	79036
Ala Gln Thr Ser	Asn Thr Asp Pro Ile	Asn Asn Gly Ser Phe	Asp	
14315	14320	14325		
ggc gtc ctt gag	ccg cct gga caa ggg	cga ttt acg gga aag	aaa	79081
Gly Val Leu Glu	Pro Pro Gly Gln Gly	Arg Phe Thr Gly Lys	Lys	
14330	14335	14340		
aac aat tcg tcc	gcc agc atc cca cct	tta caa gac gtt cta	ttg	79126
Asn Asn Ser Ser	Ala Ser Ile Pro Pro	Leu Gln Asp Val Leu	Leu	
14345	14350	14355		
ttt acc cca gct	tcg aca gaa ccc caa	agt ctt atg gaa tgg	ttc	79171
Phe Thr Pro Ala	Ser Thr Glu Pro Gln	Ser Leu Met Glu Trp	Phe	
14360	14365	14370		
gac atc tgt tat	gcc caa tta gtt agc	ggg gac act cca gca	gat	79216
Asp Ile Cys Tyr	Ala Gln Leu Val Ser	Gly Asp Thr Pro Ala	Asp	
14375	14380	14385		
ttc tgg aaa cgg	cgt ccc cta tca att	gta ccg cga cat tac	gca	79261
Phe Trp Lys Arg	Arg Pro Leu Ser Ile	Val Pro Arg His Tyr	Ala	
14390	14395	14400		
gaa tcc ccc agt	ccg ttg att gta gta	tct tac aac gga tcc	tct	79306
Glu Ser Pro Ser	Pro Leu Ile Val Val	Ser Tyr Asn Gly Ser	Ser	
14405	14410	14415		
gcc tgg gga gga	cgt att acc gga agt	cca att tta tat cac	tct	79351
Ala Trp Gly Gly	Arg Ile Thr Gly Ser	Pro Ile Leu Tyr His	Ser	
14420	14425	14430		
gca cag gct att	att gat gct gcg tgt	ata aat gcc cgg gtt	gac	79396
Ala Gln Ala Ile	Ile Asp Ala Ala Cys	Ile Asn Ala Arg Val	Asp	
14435	14440	14445		
aat ccc caa agc	cta cat gtg aca gct	cgc caa gag cta gtc	gcg	79441
Asn Pro Gln Ser	Leu His Val Thr Ala	Arg Gln Glu Leu Val	Ala	
14450	14455	14460		
cgt tta ccg ttt	ttg gct aac gtc cta	aat aat caa acc ccc	tta	79486
Arg Leu Pro Phe	Leu Ala Asn Val Leu	Asn Asn Gln Thr Pro	Leu	
14465	14470	14475		
ccc gcc ttt aaa	cca ggc gcc gaa atg	ttt tta aac cag gta	ttt	79531
Pro Ala Phe Lys	Pro Gly Ala Glu Met	Phe Leu Asn Gln Val	Phe	
14480	14485	14490		
aaa caa gcg tgt	gtg aca tcg cta acc	caa ggt ctt ata acg	gag	79576
Lys Gln Ala Cys	Val Thr Ser Leu Thr	Gln Gly Leu Ile Thr	Glu	
14495	14500	14505		
tta caa acg aac	ccg act cta caa caa	ctc atg gaa tat gat	att	79621
Leu Gln Thr Asn	Pro Thr Leu Gln Gln	Leu Met Glu Tyr Asp	Ile	
14510	14515	14520		
gca gat tct tcc	caa acg gtt att gat	gaa att gta gcc cgc	aca	79666
Ala Asp Ser Ser	Gln Thr Val Ile Asp	Glu Ile Val Ala Arg	Thr	
14525	14530	14535		



cca gac ctg att	cag act ata gtt tcg	gtg tta acg gaa atg	tca	79711
Pro Asp Leu Ile	Gln Thr Ile Val Ser	Val Leu Thr Glu Met	Ser	
14540	14545	14550		
atg gat gcg ttt	tat aac agc tcc ttg	atg tat gcg gtt ttg	gcg	79756
Met Asp Ala Phe	Tyr Asn Ser Ser Leu	Met Tyr Ala Val Leu	Ala	
14555	14560	14565		
tat ctg tca tct	gta tat aca cga cca	caa ggt ggg ggg tat	ata	79801
Tyr Leu Ser Ser	Val Tyr Thr Arg Pro	Gln Gly Gly Gly Tyr	Ile	
14570	14575	14580		
ccc tac ctt cac	gct tcc ttc cca tgc	tgg tta ggt aat cgt	tct	79846
Pro Tyr Leu His	Ala Ser Phe Pro Cys	Trp Leu Gly Asn Arg	Ser	
14585	14590	14595		
ata tat tta ttt	gac tat tat aat tca	gga ggg gaa ata ctt	aag	79891
Ile Tyr Leu Phe	Asp Tyr Tyr Asn Ser	Gly Gly Glu Ile Leu	Lys	
14600	14605	14610		
ctt tcc aag gtc	ccc gtt ccc gta gcc	tta gaa aag gtt ggt	att	79936
Leu Ser Lys Val	Pro Val Pro Val Ala	Leu Glu Lys Val Gly	Ile	
14615	14620	14625		
ggg aat tcc aca	caa ctg agg ggt aaa	ttt ata cgc agc gcg	gat	79981
Gly Asn Ser Thr	Gln Leu Arg Gly Lys	Phe Ile Arg Ser Ala	Asp	
14630	14635	14640		
att gtt gat att	gga att tgt tct aag	tat tta ccc ggt caa	tgt	80026
Ile Val Asp Ile	Gly Ile Cys Ser Lys	Tyr Leu Pro Gly Gln	Cys	
14645	14650	14655		
tac gcg tac att	tgt cta gga ttt aac	cag caa tta caa tcc	att	80071
Tyr Ala Tyr Ile	Cys Leu Gly Phe Asn	Gln Gln Leu Gln Ser	Ile	
14660	14665	14670		
tta gtt tta ccg	ggg gga ttt gcg gca	tgt ttt tgt att acc	gat	80116
Leu Val Leu Pro	Gly Gly Phe Ala Ala	Cys Phe Cys Ile Thr	Asp	
14675	14680	14685		
acc cta cag gca	gca cta cct gca tcg	tta atc gga cct att	cta	80161
Thr Leu Gln Ala	Ala Leu Pro Ala Ser	Leu Ile Gly Pro Ile	Leu	
14690	14695	14700		
gac aga ttc tgc	ttc tct att ccc aac	ccc cat aaa taa		80200
Asp Arg Phe Cys	Phe Ser Ile Pro Asn	Pro His Lys		
14705	14710			
attagtggtca ctataaaaac ataacaccag aatctcttca tatgtaatttt tacgtcatttt				80260
ctccccgtttc caccctctct taaaatataa aataaccggg tgggtggcat taaaccacaca				80320
agtacccggg cggcaatccg ctagactggt tttctgctc atg gaa tta caa cgc				80374
Met Glu Leu Gln Arg				
14715				
ata ttt ccg ctg tac acc gct	acg ggt gca gcg cgc	aaa tta acc	80419	
Ile Phe Pro Leu Tyr Thr Ala	Thr Gly Ala Ala Arg	Lys Leu Thr		
14720	14725	14730		



ccc gag	gca gtt	cag aga	ctc	tgc gat	gca tta	acg	ctg gat	atg	80464
Pro Glu	Ala Val	Gln Arg	Leu	Cys Asp	Ala Leu	Thr	Leu Asp	Met	
14735			14740			14745			
gga tta	tgg aag	tcc atc	ctg	acc gat	ccc cgg	gtg	aaa ata	atg	80509
Gly Leu	Trp Lys	Ser Ile	Leu	Thr Asp	Pro Arg	Val	Lys Ile	Met	
14750			14755			14760			
cga tca	act gct	ttt ata	act	tta agg	atc gct	ccg	ttt atc	ccc	80554
Arg Ser	Thr Ala	Phe Ile	Thr	Leu Arg	Ile Ala	Pro	Phe Ile	Pro	
14765			14770			14775			
ctt caa	acg gat	act act	aat	att gcc	gtt gtt	gta	gcc aca	att	80599
Leu Gln	Thr Asp	Thr Thr	Asn	Ile Ala	Val Val	Val	Ala Thr	Ile	
14780			14785			14790			
tac atc	acg cgc	cca cgt	cag	atg aac	tta cct	ccg	aag act	ttt	80644
Tyr Ile	Thr Arg	Pro Arg	Gln	Met Asn	Leu Pro	Pro	Lys Thr	Phe	
14795			14800			14805			
cat gta	att gta	aat ttt	aat	tac gag	gtc tcg	tac	gca atg	acg	80689
His Val	Ile Val	Asn Phe	Asn	Tyr Glu	Val Ser	Tyr	Ala Met	Thr	
14810			14815			14820			
gcg act	tta aga	att tat	ccg	gtt gaa	aac ata	gac	cat gtt	ttt	80734
Ala Thr	Leu Arg	Ile Tyr	Pro	Val Glu	Asn Ile	Asp	His Val	Phe	
14825			14830			14835			
gga gca	acg ttt	aag aac	ccg	atc gcg	tac ccc	ctt	cca aca	tct	80779
Gly Ala	Thr Phe	Lys Asn	Pro	Ile Ala	Tyr Pro	Leu	Pro Thr	Ser	
14840			14845			14850			
att ccg	gat cct	cga gca	gat	ccc acc	ccc gca	gat	ctt aca	cca	80824
Ile Pro	Asp Pro	Arg Ala	Asp	Pro Thr	Pro Ala	Asp	Leu Thr	Pro	
14855			14860			14865			
acg cca	aac tta	agc aac	tac	tta caa	ccc ccg	cgg	ctt ccg	aaa	80869
Thr Pro	Asn Leu	Ser Asn	Tyr	Leu Gln	Pro Pro	Arg	Leu Pro	Lys	
14870			14875			14880			
aat cca	tac gca	tgt aaa	gtt	att tct	ccg gga	gtg	tgg tgg	tca	80914
Asn Pro	Tyr Ala	Cys Lys	Val	Ile Ser	Pro Gly	Val	Trp Trp	Ser	
14885			14890			14895			
gac gaa	cga agg	cgt tta	tat	gta ctg	gct atg	gaa	cct aat	tta	80959
Asp Glu	Arg Arg	Arg Leu	Tyr	Val Leu	Ala Met	Glu	Pro Asn	Leu	
14900			14905			14910			
ata ggg	cta tgt	ccc gcc	gga	tgg cat	gct cgg	ata	ctt ggc	tct	81004
Ile Gly	Leu Cys	Pro Ala	Gly	Trp His	Ala Arg	Ile	Leu Gly	Ser	
14915			14920			14925			
gta tta	aat cga	ctc ctc	agc	cat gcg	gac gga	tgt	gat gaa	tgt	81049
Val Leu	Asn Arg	Leu Leu	Ser	His Ala	Asp Gly	Cys	Asp Glu	Cys	
14930			14935			14940			
aat cat	aga gtt	cac gtg	ggg	gca ctg	tat gcg	tta	ccc cat	gtc	81094
Asn His	Arg Val	His Val	Gly	Ala Leu	Tyr Ala	Leu	Pro His	Val	
14945			14950			14955			



aca aat	cat gcg gaa ggt tgt	gtg tgt tgg gct ccg	tgt atg tgg	81139		
Thr Asn	His Ala Glu Gly Cys	Val Cys Trp Ala Pro	Cys Met Trp			
14960	14965	14970				
aga aag	gcc ggt cag cgg gaa	tta aaa gtg gag gta	gac att ggc	81184		
Arg Lys	Ala Gly Gln Arg Glu	Leu Lys Val Glu Val	Asp Ile Gly			
14975	14980	14985				
gcc acg	cag gtt ctt ttt gta	gat gtc acc acc tgc	att cga att	81229		
Ala Thr	Gln Val Leu Phe Val	Asp Val Thr Thr Cys	Ile Arg Ile			
14990	14995	15000				
acg agt	act aaa aat cct cgc	att acc gca aat ctt	ggc gac gtt	81274		
Thr Ser	Thr Lys Asn Pro Arg	Ile Thr Ala Asn Leu	Gly Asp Val			
15005	15010	15015				
ata gcg	gga acc aac gcc agt	ggg ctc tct gta cca	gta aat tca	81319		
Ile Ala	Gly Thr Asn Ala Ser	Gly Leu Ser Val Pro	Val Asn Ser			
15020	15025	15030				
tct ggg	tgg cag ctt tat atg	ttt gga gaa aca tta	agc cgg gct	81364		
Ser Gly	Trp Gln Leu Tyr Met	Phe Gly Glu Thr Leu	Ser Arg Ala			
15035	15040	15045				
att att	aac ggc tgt ggt ctg	ctt cag cga att tgc	ttc ccc gag	81409		
Ile Ile	Asn Gly Cys Gly Leu	Leu Gln Arg Ile Cys	Phe Pro Glu			
15050	15055	15060				
aca caa	aga tta tcg ggt gaa	ccg gaa cct aca acc	acc tag	81451		
Thr Gln	Arg Leu Ser Gly Glu	Pro Glu Pro Thr Thr	Thr			
15065	15070	15075				
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ctgtaagacc	cgtcggtaaa	tgaaaacgta	atagattcgc	ctttttacatg	atccacgtaa	81631
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acgtttgcat	ttaccgaata	tcgccatgg	ttcaaaacta	cattgggggt	acagttgtac	82291



cctgttgacg	atagaaacgc	gccaaacatt	gcccgtcgcg	cagtagccga	gaacagtgga	82351
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gtcatcttac	gtactcggtt	cgtatatatc	ataaacattt	tcagggccgc	attcattcac	82711
tttggtc	atg tca ggc cac	act cca acc tac gct	tct cat agg cgt			82757
	Met Ser Gly His	Thr Pro Thr Tyr Ala	Ser His Arg Arg			
	15080		15085			
aac	cgt gtc aaa cta gtt	gag gcg cat aac cgc	gcg ggg tta ttt			82802
Asn	Arg Val Lys Leu Val	Glu Ala His Asn Arg	Ala Gly Leu Phe			
15090		15095	15100			
aaa	gaa cgg acc ctc gat	cta atc cgt ggg ggt	gcg agt gta caa			82847
Lys	Glu Arg Thr Leu Asp	Leu Ile Arg Gly	Ala Ser Val Gln			
15105		15110	15115			
gat	cca gca ttt gtg tat	gcc ttt act gct gca	aaa gag gcc tgc			82892
Asp	Pro Ala Phe Val Tyr	Ala Phe Thr Ala Ala	Lys Glu Ala Cys			
15120		15125	15130			
gcc	gat tta aat aac cag	ctc cgc tct gca gct	cgc ata gct tca			82937
Ala	Asp Leu Asn Asn Gln	Leu Arg Ser Ala Ala	Arg Ile Ala Ser			
15135		15140	15145			
gtt	gaa cag aag att cgt	gat ata caa tcc aag	gtt gag gaa caa			82982
Val	Glu Gln Lys Ile Arg	Asp Ile Gln Ser Lys	Val Glu Glu Gln			
15150		15155	15160			
aca	agt att caa cag att	tta aat aca aac aga	cgc tat ata gca			83027
Thr	Ser Ile Gln Gln Ile	Leu Asn Thr Asn Arg	Arg Tyr Ile Ala			
15165		15170	15175			
ccc	gat ttt att cgc ggt	ttg gat aaa aca gaa	gac gat aat acc			83072
Pro	Asp Phe Ile Arg Gly	Leu Asp Lys Thr Glu	Asp Asp Asn Thr			
15180		15185	15190			
gat	aat ata gac aga ctg	gaa gac gcg gta gga	ccg aac atc gaa			83117
Asp	Asn Ile Asp Arg Leu	Glu Asp Ala Val Gly	Pro Asn Ile Glu			
15195		15200	15205			
cac	gaa aat cat act tgg	ttt gga gaa gac gac	gaa gcg tta ctt			83162
His	Glu Asn His Thr Trp	Phe Gly Glu Asp Asp	Glu Ala Leu Leu			
15210		15215	15220			
aca	caa tgg atg ctg acg	aca cac ccc cca acc	tcc aaa tat ctc			83207
Thr	Gln Trp Met Leu Thr	Thr His Pro Pro Thr	Ser Lys Tyr Leu			
15225		15230	15235			
caa	ctg cag gac ctt tgc	gtt ccc acc aca ata	ccg acg gac atg			83252
Gln	Leu Gln Asp Leu Cys	Val Pro Thr Thr Ile	Pro Thr Asp Met			



15240		15245		15250	
aac	caa atg caa ccg	cag	ccg atc agc aag	aac	gag aat cca cca
Asn	Gln Met Gln Pro	Gln	Pro Ile Ser Lys	Asn	Glu Asn Pro Pro
15255		15260		15265	
acc	cca cac acg gat	gtg	taa atcatccatg	ggccaatccg	tcaactgcaa
Thr	Pro His Thr Asp	Val			
15270		15275			
catgcatgga	atcaccagaa	cgatcacaac	agacaagctt	atttttatta	aagcacggct
taacgagaga	tccaatacat	caacgcgaaa	gggtggacgt	ttttccacaa	tttaacaaac
ccccatgggt	ttttagaatt	tccaaattat	cccgtttaat	tgtacccatc	ttcacgctca
atgaacagtt	atgtttttct	aaattacaga	ttcgagatag	accaggttt	gcgggacggg
gaacgtatgg	gcgtgttcat	atatacccat	cgtcaaaaat	agctgtaaaa	accatggaca
gtcgtgtttt	taatagagag	ttaattaacg	cgatttttagc	gagtgagggt	tctatacgag
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aacagctact	gtttccggca	tacgacatgg	atatggatga	atacattgtt	cgctgtcca
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cccgtatttc	ccggaattct	ttacgccgga	tattccagtg	tcacgcagtg	cgttacggcg
taacgcactc	aaagcttttc	gaaggcatac	gcattccggc	ctcattatac	ccagccactg
ttgttacatc	gttggtgtgt	cacgataatt	cagaaatacg	ctcggatcac	cctttatt
atg	gca cga tcg gga	ttg	gat agg atc gac	ata	agc ccc cag cca
Met	Ala Arg Ser Gly	Leu	Asp Arg Ile Asp	Ile	Ser Pro Gln Pro
	15280		15285		15290
gcc	aaa aaa att gcc	cgt	gtg gga ggt cta	cag	cac cct ttt gta
Ala	Lys Lys Ile Ala	Arg	Val Gly Gly Leu	Gln	His Pro Phe Val



15295					15300					15305					
aaa acg gat att aac	acg att aac gtt gaa	cac cat ttt ata gac	84801												
Lys Thr Asp Ile Asn	Thr Ile Asn Val Glu	His His Phe Ile Asp													
15310	15315	15320													
acg cta cag aag aca	tca ccg aac atg gac	tgt cgc ggg atg aca	84846												
Thr Leu Gln Lys Thr	Ser Pro Asn Met Asp	Cys Arg Gly Met Thr													
15325	15330	15335													
gcg ggt att ttt att	cgt tta tcc cac atg	tat aaa att cta aca	84891												
Ala Gly Ile Phe Ile	Arg Leu Ser His Met	Tyr Lys Ile Leu Thr													
15340	15345	15350													
act ctg gag tct cca	aat gat gta acc tac	aca aca ccc ggt tct	84936												
Thr Leu Glu Ser Pro	Asn Asp Val Thr Tyr	Thr Thr Pro Gly Ser													
15355	15360	15365													
acc aac gca ctg ttc	ttt aag acg tcc aca	cag cct cag gag ccg	84981												
Thr Asn Ala Leu Phe	Phe Lys Thr Ser Thr	Gln Pro Gln Glu Pro													
15370	15375	15380													
cgt ccg gaa gag tta	gca tcc aaa tta acc	caa gac gac att aaa	85026												
Arg Pro Glu Glu Leu	Ala Ser Lys Leu Thr	Gln Asp Asp Ile Lys													
15385	15390	15395													
cgt att cta tta aca	ata gaa tcg gag act	cgt ggt cag ggc gac	85071												
Arg Ile Leu Leu Thr	Ile Glu Ser Glu Thr	Arg Gly Gln Gly Asp													
15400	15405	15410													
aat gcc att tgg aca	cta ctc aga cga aat	tta atc acc gca tca	85116												
Asn Ala Ile Trp Thr	Leu Leu Arg Arg Asn	Leu Ile Thr Ala Ser													
15415	15420	15425													
act ctt aaa tgg agt	gta tct gga ccc gtc	att cca cct cag tgg	85161												
Thr Leu Lys Trp Ser	Val Ser Gly Pro Val	Ile Pro Pro Gln Trp													
15430	15435	15440													
ttt tac cac cat aac	act aca gac aca tac	ggg gat gcg gcg gca	85206												
Phe Tyr His His Asn	Thr Thr Asp Thr Tyr	Gly Asp Ala Ala Ala													
15445	15450	15455													
atg gcg ttt gga aaa	acc aac gaa ccg gcg	gca cga gcg ata gtt	85251												
Met Ala Phe Gly Lys	Thr Asn Glu Pro Ala	Ala Arg Ala Ile Val													
15460	15465	15470													
gaa gca ttg ttt ata	gat ccg gct gat atc	cgt act cct gat cat	85296												
Glu Ala Leu Phe Ile	Asp Pro Ala Asp Ile	Arg Thr Pro Asp His													
15475	15480	15485													
tta acg cca gaa gct	aca act aag ttt ttt	aat ttt gac atg ctc	85341												
Leu Thr Pro Glu Ala	Thr Thr Lys Phe Phe	Asn Phe Asp Met Leu													
15490	15495	15500													
aat acc aaa tct cca	agt ctc ctt gtg ggt	aca cca aga atc gga	85386												
Asn Thr Lys Ser Pro	Ser Leu Leu Val Gly	Thr Pro Arg Ile Gly													
15505	15510	15515													
acg tat gaa tgt gga	ctt tta atc gac gtt	cga acg gga ctt ata	85431												
Thr Tyr Glu Cys Gly	Leu Leu Ile Asp Val	Arg Thr Gly Leu Ile													



15520					15525					15530					
ggc	gcg	tcg	ttg	gac	gtt	ctt	gta	tgt	gac	agg	gac	cct	tta	act	85476
Gly	Ala	Ser	Leu	Asp	Val	Leu	Val	Cys	Asp	Arg	Asp	Pro	Leu	Thr	
				15535					15540					15545	
ggc	acc	cta	aat	ccc	cac	cct	gca	gaa	acc	gac	att	tca	ttt	ttt	85521
Gly	Thr	Leu	Asn	Pro	His	Pro	Ala	Glu	Thr	Asp	Ile	Ser	Phe	Phe	
				15550					15555					15560	
gaa	att	aaa	tgt	cgt	gct	aaa	tac	ctc	ttt	gat	cca	gat	gac	aaa	85566
Glu	Ile	Lys	Cys	Arg	Ala	Lys	Tyr	Leu	Phe	Asp	Pro	Asp	Asp	Lys	
				15565					15570					15575	
aat	aac	ccg	ctc	ggt	cgg	acg	tac	acc	acg	tta	ata	aat	aga	cct	85611
Asn	Asn	Pro	Leu	Gly	Arg	Thr	Tyr	Thr	Thr	Leu	Ile	Asn	Arg	Pro	
				15580					15585					15590	
aca	atg	gca	aat	cta	cgg	gac	ttt	tta	tat	act	ata	aaa	aac	cca	85656
Thr	Met	Ala	Asn	Leu	Arg	Asp	Phe	Leu	Tyr	Thr	Ile	Lys	Asn	Pro	
				15595					15600					15605	
tgt	gta	agc	ttc	ttt	gga	ccc	tca	gca	aac	cca	agt	aca	cgc	gag	85701
Cys	Val	Ser	Phe	Phe	Gly	Pro	Ser	Ala	Asn	Pro	Ser	Thr	Arg	Glu	
				15610					15615					15620	
gcc	tta	ata	acg	gat	cac	gtt	gaa	tgg	aaa	cgt	tta	gga	ttt	aaa	85746
Ala	Leu	Ile	Thr	Asp	His	Val	Glu	Trp	Lys	Arg	Leu	Gly	Phe	Lys	
				15625					15630					15635	
ggt	ggg	agg	gcc	ctt	aca	gaa	ctc	gac	gcc	cat	cat	ttg	ggc	ctc	85791
Gly	Gly	Arg	Ala	Leu	Thr	Glu	Leu	Asp	Ala	His	His	Leu	Gly	Leu	
				15640					15645					15650	
aat	cgg	aca	atc	tca	tcc	cga	gtg	tgg	gta	ttt	aat	gat	ccg	gac	85836
Asn	Arg	Thr	Ile	Ser	Ser	Arg	Val	Trp	Val	Phe	Asn	Asp	Pro	Asp	
				15655					15660					15665	
ata	caa	aag	ggg	aca	att	aca	acc	att	gca	tgg	gcc	act	gga	gat	85881
Ile	Gln	Lys	Gly	Thr	Ile	Thr	Thr	Ile	Ala	Trp	Ala	Thr	Gly	Asp	
				15670					15675					15680	
acg	gct	ctt	caa	att	cct	gta	ttt	gcc	aat	ccg	cgg	cac	gct	aac	85926
Thr	Ala	Leu	Gln	Ile	Pro	Val	Phe	Ala	Asn	Pro	Arg	His	Ala	Asn	
				15685					15690					15695	
ttt	aaa	caa	att	gcc	gta	caa	acc	tat	gta	tta	tcc	ggt	tac	ttt	85971
Phe	Lys	Gln	Ile	Ala	Val	Gln	Thr	Tyr	Val	Leu	Ser	Gly	Tyr	Phe	
				15700					15705					15710	
cca	gcg	cta	aaa	cta	cgg	ccc	ttc	ctt	gtc	acc	ttt	ata	gga	cgt	86016
Pro	Ala	Leu	Lys	Leu	Arg	Pro	Phe	Leu	Val	Thr	Phe	Ile	Gly	Arg	
				15715					15720					15725	
gtg	cgc	cga	cca	cac	gag	gtg	gga	gtc	cca	ttg	cgc	gtc	gat	aca	86061
Val	Arg	Arg	Pro	His	Glu	Val	Gly	Val	Pro	Leu	Arg	Val	Asp	Thr	
				15730					15735					15740	
caa	gcg	gct	gcc	att	tac	gaa	tat	aac	tgg	ccg	act	atc	cca	ccc	86106
Gln	Ala	Ala	Ala	Ile	Tyr	Glu	Tyr	Asn	Trp	Pro	Thr	Ile	Pro	Pro	



15745	15750	15755	
cac tgt gcg gtt ccg	gtt ata gcc gtt cta	acg cct atc gaa gtt	86151
His Cys Ala Val Pro	Val Ile Ala Val Leu	Thr Pro Ile Glu Val	
15760	15765	15770	
gat gtg cct aga gtg	aca caa ata ctt aaa	gac aca gga aac aac	86196
Asp Val Pro Arg Val	Thr Gln Ile Leu Lys	Asp Thr Gly Asn Asn	
15775	15780	15785	
gcg att aca tca gca	ttg cgg tca ttg cga	tgg gac aat ctt cat	86241
Ala Ile Thr Ser Ala	Leu Arg Ser Leu Arg	Trp Asp Asn Leu His	
15790	15795	15800	
cca gcg gtc gag gag	gaa tct gtg gat tgt	gca aac ggt aca acg	86286
Pro Ala Val Glu Glu	Glu Ser Val Asp Cys	Ala Asn Gly Thr Thr	
15805	15810	15815	
agc ttg tta cgt gca	acg gag aaa ccg ttg	ctt tga actcagagtt	86332
Ser Leu Leu Arg Ala	Thr Glu Lys Pro Leu	Leu	
15820	15825		
ctttgaagac tttgactttg	atgagaatgt aacagaggac	gccgataaat ccacacaacg	86392
ccgcccacga gtgatcgatg	taacaccaaa acgaaaacct	tcgggaaaga gctcccattc	86452
caaatgcgca aaatgttaaa	ccctgataaa ccttgataaa	cgttctaata aaaacatcaa	86512
atcatggttg gttactgtga	atgtttgttt tattgcttgg	gggtttataa gtacaaccca	86572
cgctactccc acccactgtt	tgatcgctcg tataacagct	catcctcgcg gtccgtttca	86632
tatgttgagt cattttcata	gacgtagccg tagccttgtg	atgggtaatt tgtgcggcga	86692
gaattttctat gtgcaggttt	tacttttctgt atgtatcccc	gtacccgctc gggtaactctt	86752
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 Met Ser Pro

aac acc ggg gag agc aac gcc gcc gtc tat gcg tcc agt aca cag 87934  
 Asn Thr Gly Glu Ser Asn Ala Ala Val Tyr Ala Ser Ser Thr Gln  
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 Leu Ala Arg Ala Leu Tyr Gly Gly Asp Leu Val Ser Trp Ile Lys  
 15845 15850 15855

cac acc cac ccg gga att agc ctg gaa ctg caa ttg gat gtt cca 88024  
 His Thr His Pro Gly Ile Ser Leu Glu Leu Gln Leu Asp Val Pro  
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 Val Lys Leu Ile Lys Pro Gly Met Ser Gln Thr Arg Pro Val Thr  
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 Val Val Arg Ala Pro Met Gly Ser Gly Lys Thr Thr Ala Leu Leu  
 15890 15895 15900

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 Glu Trp Leu Gln His Ala Leu Lys Ala Asp Ile Ser Val Leu Val  
 15905 15910 15915

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 Val Ser Cys Arg Arg Ser Phe Thr Gln Thr Leu Ile Gln Arg Phe  
 15920 15925 15930

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 Asn Asp Ala Gly Leu Ser Gly Phe Val Thr Tyr Leu Thr Ser Glu  
 15935 15940 15945

aca tat att atg ggt ttt aaa cgt ttg att gtg caa ctt gaa agc 88294  
 Thr Tyr Ile Met Gly Phe Lys Arg Leu Ile Val Gln Leu Glu Ser  
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cta cac cgc gta tcc agc gaa gct atc gac agc tac gac gta tta 88339  
 Leu His Arg Val Ser Ser Glu Ala Ile Asp Ser Tyr Asp Val Leu  
 15965 15970 15975

ata ctg gat gag gta atg tca gtg att gga caa tta tac tcc ccc 88384  
 Ile Leu Asp Glu Val Met Ser Val Ile Gly Gln Leu Tyr Ser Pro  
 15980 15985 15990



aca Thr 15995	atg Met	aga Arg	cgt Arg	ctt Leu	tcc Ser 16000	gcg Ala	gtt Val	gat Asp	agc Ser	cta Leu 16005	tta Leu	tat Tyr	cgt Arg	ctt Leu	88429
tta Leu 16010	aat Asn	cgc Arg	tgt Cys	tct Ser	caa Gln 16015	att Ile	atc Ile	gcg Ala	atg Met	gat Asp 16020	gct Ala	aca Thr	gta Val	aac Asn	88474
tcg Ser 16025	cag Gln	ttt Phe	att Ile	gat Asp	tta Leu 16030	atc Ile	tcc Ser	gga Gly	ttg Leu	cgt Arg 16035	gga Gly	gat Asp	gaa Glu	aac Asn	88519
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aga Arg 16055	act Thr	tgc Cys	acg Thr	atc Ile	ctg Leu 16060	cgt Arg	gat Asp	atg Met	ggc Gly	atc Ile 16065	gac Asp	acg Thr	ctt Leu	gtg Val	88609
cga Arg 16070	gtc Val	att Ile	aaa Lys	cga Arg	tct Ser 16075	cct Pro	gaa Glu	cac His	gag Glu	gat Asp 16080	gta Val	cgt Arg	acc Thr	ata Ile	88654
cac His 16085	caa Gln	cta Leu	cgt Arg	gga Gly	aca Thr 16090	ttt Phe	ttt Phe	gac Asp	gaa Glu	cta Leu 16095	gca Ala	cta Leu	cga Arg	tta Leu	88699
caa Gln 16100	tgt Cys	ggg Gly	cat His	aac Asn	atc Ile 16105	tgt Cys	ata Ile	ttt Phe	tca Ser	tca Ser 16110	act Thr	tta Leu	tcg Ser	ttt Phe	88744
tcg Ser 16115	gag Glu	cta Leu	gtt Val	gct Ala	cag Gln 16120	ttt Phe	tgt Cys	gca Ala	ata Ile	ttt Phe 16125	aca Thr	gac Asp	tct Ser	att Ile	88789
ctt Leu 16130	att Ile	tta Leu	aac Asn	tca Ser	act Thr 16135	cgg Arg	ccc Pro	cta Leu	tgt Cys	aat Asn 16140	gta Val	aac Asn	gaa Glu	tgg Trp	88834
aaa Lys 16145	cat His	ttt Phe	cgc Arg	gtg Val	ttg Leu 16150	gtg Val	tac Tyr	act Thr	acc Thr	gtc Val 16155	gtg Val	acc Thr	gtt Val	gga Gly	88879
ttg Leu 16160	agt Ser	ttt Phe	gac Asp	atg Met	gct Ala 16165	cat His	ttt Phe	cat His	agc Ser	atg Met 16170	ttt Phe	gct Ala	tac Tyr	ata Ile	88924
aag Lys 16175	cca Pro	atg Met	tca Ser	tat Tyr	ggg Gly 16180	ccg Pro	gat Asp	atg Met	gta Val	tcg Ser 16185	gtc Val	tac Tyr	cag Gln	tca Ser	88969
tta Leu 16190	ggg Gly	cgt Arg	gta Val	cgt Arg	tta Leu 16195	ttg Leu	cta Leu	ctt Leu	aat Asn	gaa Glu 16200	gtt Val	ttg Leu	atg Met	tac Tyr	89014
gtc Val 16205	gat Asp	ggc Gly	tca Ser	agg Arg	acc Thr 16210	aga Arg	tgc Cys	gga Gly	ccc Pro	ctg Leu 16215	ttc Phe	tcg Ser	cca Pro	atg Met	89059



tta Leu 16220	cta Leu	aac Asn	ttt Phe	acc Thr	atc Ile 16225	gca Ala	aat Asn	aaa Lys	ttt Phe	caa Gln 16230	tgg Trp	ttt Phe	cct Pro	aca Thr	89104
cac His 16235	acc Thr	caa Gln	ata Ile	act Thr	aac Asn 16240	aaa Lys	ctg Leu	tgc Cys	tgt Cys	gca Ala 16245	ttt Phe	agg Arg	caa Gln	cga Arg	89149
tgt Cys 16250	gca Ala	aat Asn	gca Ala	ttt Phe	aca Thr 16255	cgc Arg	tcg Ser	aac Asn	acc Thr	cat His 16260	ctc Leu	ttc Phe	tca Ser	aga Arg	89194
ttt Phe 16265	aaa Lys	tac Tyr	aaa Lys	cac His	ctt Leu 16270	ttc Phe	gag Glu	aga Arg	tgc Cys	tct Ser 16275	ctt Leu	tgg Trp	agt Ser	tta Leu	89239
gcc Ala 16280	gat Asp	agc Ser	att Ile	aat Asn	atc Ile 16285	tta Leu	caa Gln	act Thr	ctt Leu	ttg Leu 16290	gcc Ala	tct Ser	aac Asn	caa Gln	89284
att Ile 16295	ttg Leu	gtt Val	gta Val	ttg Leu	gat Asp 16300	ggc Gly	atg Met	ggt Gly	cca Pro	ata Ile 16305	acg Thr	gac Asp	gtt Val	tcc Ser	89329
cca Pro 16310	gtt Val	caa Gln	ttt Phe	tgt Cys	gca Ala 16315	ttt Phe	ata Ile	cac His	gat Asp	ctc Leu 16320	aga Arg	cat His	agc Ser	gct Ala	89374
aac Asn 16325	gcc Ala	gta Val	gct Ala	tcc Ser	tgt Cys 16330	atg Met	cgt Arg	tct Ser	ctt Leu	aga Arg 16335	cag Gln	gac Asp	aat Asn	gac Asp	89419
agc Ser 16340	tgc Cys	ttg Leu	acc Thr	gat Asp	ttt Phe 16345	ggc Gly	cct Pro	tcc Ser	gga Gly	ttt Phe 16350	atg Met	gcc Ala	gat Asp	aac Asn	89464
att Ile 16355	acc Thr	gcg Ala	ttt Phe	atg Met	gaa Glu 16360	aag Lys	tat Tyr	ctt Leu	atg Met	gag Glu 16365	tca Ser	att Ile	aat Asn	acc Thr	89509
gaa Glu 16370	gaa Glu	caa Gln	att Ile	aaa Lys	gta Val 16375	ttt Phe	aaa Lys	gcc Ala	ctt Leu	gca Ala 16380	tgt Cys	cca Pro	ata Ile	gaa Glu	89554
cag Gln 16385	cct Pro	aga Arg	cta Leu	gtc Val	aat Asn 16390	acg Thr	gca Ala	ata Ile	ttg Leu	ggg Gly 16395	gcg Ala	tgt Cys	ata Ile	cga Arg	89599
ata Ile 16400	cct Pro	gaa Glu	gcg Ala	ttg Leu	gaa Glu 16405	gca Ala	ttt Phe	gac Asp	gta Val	ttt Phe 16410	caa Gln	aaa Lys	ata Ile	tac Tyr	89644
acg Thr 16415	cac His	tac Tyr	gct Ala	tcc Ser	ggt Gly 16420	tgg Trp	ttt Phe	ccc Pro	gtc Val	ctg Leu 16425	gac Asp	aaa Lys	acc Thr	ggg Gly	89689
gaa Glu 16430	ttt Phe	agc Ser	atc Ile	gcg Ala	act Thr 16435	ata Ile	act Thr	acc Thr	gcc Ala	cca Pro 16440	aat Asn	tta Leu	acc Thr	aca Thr	89734



cat His 16445	tgg Trp	gag Glu	ctg Leu	ttt Phe	cgc Arg 16450	cgt Arg	tgt Cys	gcc Ala	tat Tyr	att Ile 16455	gca Ala	aaa Lys	aca Thr	ctc Leu	89779
aag Lys 16460	tgg Trp	aat Asn	ccg Pro	tcc Ser	acc Thr 16465	gaa Glu	ggc Gly	tgt Cys	gta Val	aca Thr 16470	caa Gln	ggt Val	ttg Leu	gat Asp	89824
acg Thr 16475	gac Asp	att Ile	aat Asn	aca Thr	ctt Leu 16480	ttc Phe	aat Asn	caa Gln	cac His	ggg Gly 16485	gat Asp	tcg Ser	ctg Leu	gct Ala	89869
caa Gln 16490	cta Leu	ata Ile	ttt Phe	gag Glu	gtt Val 16495	atg Met	cgc Arg	tgt Cys	aac Asn	gtt Val 16500	act Thr	gac Asp	gct Ala	aag Lys	89914
att Ile 16505	ata Ile	tta Leu	aac Asn	cgc Arg	ccg Pro 16510	gtt Val	tgg Trp	cga Arg	aca Thr	acc Thr 16515	gga Gly	ttc Phe	tta Leu	gat Asp	89959
gga Gly 16520	tgc Cys	cat His	aat Asn	caa Gln	tgc Cys 16525	ttc Phe	cgt Arg	cca Pro	atc Ile	cct Pro 16530	aca Thr	aaa Lys	cac His	gaa Glu	90004
tat Tyr 16535	aac Asn	att Ile	gct Ala	cta Leu	ttt Phe 16540	cgt Arg	tta Leu	att Ile	tgg Trp	gaa Glu 16545	caa Gln	tta Leu	ttt Phe	ggc Gly	90049
gcc Ala 16550	cgc Arg	gta Val	act Thr	aaa Lys	agt Ser 16555	acc Thr	cag Gln	acc Thr	ttt Phe	ccg Pro 16560	gga Gly	agt Ser	act Thr	cgt Arg	90094
gtg Val 16565	aaa Lys	aac Asn	cta Leu	aaa Lys	aaa Lys 16570	aaa Lys	gat Asp	cta Leu	gaa Glu	act Thr 16575	tta Leu	ctt Leu	gat Asp	tca Ser	90139
att Ile 16580	aac Asn	gtg Val	gat Asp	cgt Arg	tct Ser 16585	gca Ala	tgt Cys	cgt Arg	acc Thr	tac Tyr 16590	cgc Arg	cag Gln	ttg Leu	tat Tyr	90184
aac Asn 16595	ctg Leu	ctt Leu	atg Met	agc Ser	cag Gln 16600	cgc Arg	cat His	tcg Ser	ttc Phe	tct Ser 16605	caa Gln	cag Gln	cgt Arg	tac Tyr	90229
aaa Lys 16610	att Ile	act Thr	gcc Ala	ccc Pro	gct Ala 16615	tgg Trp	gca Ala	cgc Arg	cac His	gtg Val 16620	tat Tyr	ttt Phe	caa Gln	gca Ala	90274
cat His 16625	caa Gln	atg Met	cac His	ttg Leu	gcc Ala 16630	ccg Pro	cat His	gcc Ala	gaa Glu	gcc Ala 16635	atg Met	cta Leu	caa Gln	tta Leu	90319
gcg Ala 16640	cta Leu	tcg Ser	gaa Glu	ctg Leu	tcc Ser 16645	ccg Pro	gga Gly	tcg Ser	tgg Trp	ccg Pro 16650	cgg Arg	ata Ile	aac Asn	ggg Gly	90364
gcg Ala 16655	gta Val	aat Asn	ttt Phe	gaa Glu	agt Ser 16660	tta Leu	taa	cccgttaata	ccatatatgg						90408



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			Met Asp Ala Thr	Gln Ile Thr Leu		
			16665			
gtt	aga gaa agc gga	cac	att tgt gcc gca	agc	ata tac aca tcc	90561
Val	Arg Glu Ser Gly	His	Ile Cys Ala Ala	Ser	Ile Tyr Thr Ser	
16670		16675		16680		
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Trp	Thr Gln Ser Gly	Gln	Leu Thr Gln Asn	Gly	Leu Ser Val Leu	
16685		16690		16695		
tac	tac tta tta tgc	aaa	aac tca tgt ggg	aaa	tac gtc cct aag	90651
Tyr	Tyr Leu Leu Cys	Lys	Asn Ser Cys Gly	Lys	Tyr Val Pro Lys	
16700		16705		16710		
ttt	gcc gaa att acc	gta	caa caa gag gat	tta	tgt cgc tac tcc	90696
Phe	Ala Glu Ile Thr	Val	Gln Gln Glu Asp	Leu	Cys Arg Tyr Ser	
16715		16720		16725		
agg	cat ggg ggg agt	gtt	tct gcg gca acg	ttt	gcg tct atc tgc	90741
Arg	His Gly Gly Ser	Val	Ser Ala Ala Thr	Phe	Ala Ser Ile Cys	
16730		16735		16740		
agg	gcg gcg tcc tcg	gct	gcg tta gac gcc	tgg	ccc ctt gaa cca	90786
Arg	Ala Ala Ser Ser	Ala	Ala Leu Asp Ala	Trp	Pro Leu Glu Pro	
16745		16750		16755		
ctg	ggg aac gca gac	acc	tgg cgt tgt ctc	cat	ggc act gcc ctg	90831
Leu	Gly Asn Ala Asp	Thr	Trp Arg Cys Leu	His	Gly Thr Ala Leu	
16760		16765		16770		
gcc	act tta cgg cgc	gta	tta ggg ttt aaa	tcg	ttt tat tcg cca	90876
Ala	Thr Leu Arg Arg	Val	Leu Gly Phe Lys	Ser	Phe Tyr Ser Pro	
16775		16780		16785		
gta	aca ttc gag act	gat	acg aat aca ggt	ctt	ctg tta aaa aca	90921
Val	Thr Phe Glu Thr	Asp	Thr Asn Thr Gly	Leu	Leu Leu Lys Thr	
16790		16795		16800		
atc	ccc gat gaa cac	gcg	ttg aat aat gac	aac	acg cca tct acc	90966
Ile	Pro Asp Glu His	Ala	Leu Asn Asn Asp	Asn	Thr Pro Ser Thr	
16805		16810		16815		
gga	gta ttg agg gct	aat	ttt ccc gtg gcc	att	gat gtt tca gca	91011
Gly	Val Leu Arg Ala	Asn	Phe Pro Val Ala	Ile	Asp Val Ser Ala	
16820		16825		16830		
gtc	agc gca tgt aac	gcc	cac acg caa ggt	acg	tcg cta gcc tac	91056
Val	Ser Ala Cys Asn	Ala	His Thr Gln Gly	Thr	Ser Leu Ala Tyr	
16835		16840		16845		
gcc	cgc ctg acc gca	ctt	aaa tct aac ggt	gac	acc cag caa caa	91101
Ala	Arg Leu Thr Ala	Leu	Lys Ser Asn Gly	Asp	Thr Gln Gln Gln	
16850		16855		16860		
aca	cct tta gac gtg	gag	gta att aca cca	aag	gcc tac ata cgt	91146
Thr	Pro Leu Asp Val	Glu	Val Ile Thr Pro	Lys	Ala Tyr Ile Arg	



16865		16870		16875	
cgg	aaa tat aag tct	acg	ttt tcc ccc cct	ata	gag cgg gaa ggc
Arg	Lys Tyr Lys Ser	Thr	Phe Ser Pro Pro	Ile	Glu Arg Glu Gly
16880		16885		16890	91191
caa	acc tcc gat ttg	ttt	aac ctt gaa gaa	cgc	cgc ttg gtt ctt
Gln	Thr Ser Asp Leu	Phe	Asn Leu Glu Glu	Arg	Arg Leu Val Leu
16895		16900		16905	91236
agt	ggc aat cgc gca	att	gtg gta agg gta	ctc	tta ccg tgt tat
Ser	Gly Asn Arg Ala	Ile	Val Val Arg Val	Leu	Leu Pro Cys Tyr
16910		16915		16920	91281
ttt	gac tgt tta aca	acg	gat tcc acc gtt	aca	tct tcc ctt tca
Phe	Asp Cys Leu Thr	Thr	Asp Ser Thr Val	Thr	Ser Ser Leu Ser
16925		16930		16935	91326
ata	tta gca aca tat	aga	ctg tgg tac gcg	gcg	gcg ttt gga aaa
Ile	Leu Ala Thr Tyr	Arg	Leu Trp Tyr Ala	Ala	Ala Phe Gly Lys
16940		16945		16950	91371
ccc	ggg gtt gtc cgt	cca	atc ttt gcg tat	tta	ggc ccg gaa ctc
Pro	Gly Val Val Arg	Pro	Ile Phe Ala Tyr	Leu	Gly Pro Glu Leu
16955		16960		16965	91416
aat	ccg aag ggt gaa	gac	aga gac tac ttt	tgt	act gtc gga ttt
Asn	Pro Lys Gly Glu	Asp	Arg Asp Tyr Phe	Cys	Thr Val Gly Phe
16970		16975		16980	91461
ccc	gga tgg acc act	ctt	cgg aca caa act	cca	gcc gtc gaa tct
Pro	Gly Trp Thr Thr	Leu	Arg Thr Gln Thr	Pro	Ala Val Glu Ser
16985		16990		16995	91506
att	cgc acg gct acg	gag	atg tac atg gaa	acg	gat ggg ttg tgg
Ile	Arg Thr Ala Thr	Glu	Met Tyr Met Glu	Thr	Asp Gly Leu Trp
17000		17005		17010	91551
cca	gta acc ggt att	cag	gcc ttt cat tat	cta	gcc ccc tgg gga
Pro	Val Thr Gly Ile	Gln	Ala Phe His Tyr	Leu	Ala Pro Trp Gly
17015		17020		17025	91596
cag	cat ccc ccc tta	cct	cgg cgg gtg cag	gat	ctt att ggg caa
Gln	His Pro Pro Leu	Pro	Pro Arg Val Gln	Asp	Leu Ile Gly Gln
17030		17035		17040	91641
atc	cct caa gat act	gga	cat gca gat gca	act	gtc aat tgg gac
Ile	Pro Gln Asp Thr	Gly	His Ala Asp Ala	Thr	Val Asn Trp Asp
17045		17050		17055	91686
gcg	ggc cgg ata tct	acc	gtc ttc aaa cag	cct	gta caa cta caa
Ala	Gly Arg Ile Ser	Thr	Val Phe Lys Gln	Pro	Val Gln Leu Gln
17060		17065		17070	91731
gat	cgt tgg atg gca	aag	ttt gat ttc agc	gcc	ttt ttt ccc acg
Asp	Arg Trp Met Ala	Lys	Phe Asp Phe Ser	Ala	Phe Phe Pro Thr
17075		17080		17085	91776
ata	tac tgc gct atg	ttc	ccc atg cat ttt	aga	tta ggc aaa atc
Ile	Tyr Cys Ala Met	Phe	Pro Met His Phe	Arg	Leu Gly Lys Ile
					91821



17090		17095		17100	
gtc	ctg gct aga atg cgt	cga gga atg ggg tgc	cta aaa ccc gcg	91866	
Val	Leu Ala Arg Met Arg	Arg Gly Met Gly Cys	Leu Lys Pro Ala		
17105		17110		17115	
ttg	gtg tct ttt ttt ggg	ggg tta cgg cac ata	ctc ccg agt ata	91911	
Leu	Val Ser Phe Phe Gly	Gly Leu Arg His Ile	Leu Pro Ser Ile		
17120		17125		17130	
tac	aaa gct att att ttt	ata gcc aat gaa att	agc ctt tgc gtc	91956	
Tyr	Lys Ala Ile Ile Phe	Ile Ala Asn Glu Ile	Ser Leu Cys Val		
17135		17140		17145	
gaa	caa acg gcc ttg gaa	cag ggc ttt gct ata	tgt act tat ata	92001	
Glu	Gln Thr Ala Leu Glu	Gln Gly Phe Ala Ile	Cys Thr Tyr Ile		
17150		17155		17160	
aaa	gat gga ttt tgg gga	atc ttc acc gat tta	cat acg cgc aat	92046	
Lys	Asp Gly Phe Trp Gly	Ile Phe Thr Asp Leu	His Thr Arg Asn		
17165		17170		17175	
gta	tgt tca gat cag gca	cgt tgt tcg gcc tta	aat tta gcg gcc	92091	
Val	Cys Ser Asp Gln Ala	Arg Cys Ser Ala Leu	Asn Leu Ala Ala		
17180		17185		17190	
acc	tgc gaa aga gca gtc	acg ggc tta tta cga	att caa cta ggt	92136	
Thr	Cys Glu Arg Ala Val	Thr Gly Leu Leu Arg	Ile Gln Leu Gly		
17195		17200		17205	
ctt	aac ttt aca ccc gcc	atg gaa ccg gta ctc	cgg gtc gag ggt	92181	
Leu	Asn Phe Thr Pro Ala	Met Glu Pro Val Leu	Arg Val Glu Gly		
17210		17215		17220	
gtg	tac act cac gca ttt	acc tgg tgt acc acg	gga agc tgg ctg	92226	
Val	Tyr Thr His Ala Phe	Thr Trp Cys Thr Thr	Gly Ser Trp Leu		
17225		17230		17235	
tgg	aat tta caa aca aac	acg cct ccg gat tta	gtt ggc gtg cca	92271	
Trp	Asn Leu Gln Thr Asn	Thr Pro Pro Asp Leu	Val Gly Val Pro		
17240		17245		17250	
tgg	cga agt cag gcg gcg	cga gat tta aag gag	cgt ctt tca gga	92316	
Trp	Arg Ser Gln Ala Ala	Arg Asp Leu Lys Glu	Arg Leu Ser Gly		
17255		17260		17265	
ctc	cta tgt acc gca aca	aaa att cga gaa cgg	ata cag gaa aat	92361	
Leu	Leu Cys Thr Ala Thr	Lys Ile Arg Glu Arg	Ile Gln Glu Asn		
17270		17275		17280	
tgc	ata tgg gac cat gtc	cta tac gac ata tgg	gcc gga caa gtt	92406	
Cys	Ile Trp Asp His Val	Leu Tyr Asp Ile Trp	Ala Gly Gln Val		
17285		17290		17295	
gtg	gag gct gcc aga aaa	aca tac gtc gat ttt	ttt gaa cat gtt	92451	
Val	Glu Ala Ala Arg Lys	Thr Tyr Val Asp Phe	Phe Glu His Val		
17300		17305		17310	
ttt	gat cgc cgt tat act	ccg gta tac tgg agt	ctt cag gag caa	92496	
Phe	Asp Arg Arg Tyr Thr	Pro Val Tyr Trp Ser	Leu Gln Glu Gln		



17315		17320		17325		
aat	tcg gaa aca aaa gca	ata ccg gca tct tat	ctg aca tac gga	92541		
Asn	Ser Glu Thr Lys Ala	Ile Pro Ala Ser Tyr	Leu Thr Tyr Gly			
17330		17335		17340		
cac	atg caa gat aag gat	tat aaa cca aga cag	ata att atg gtt	92586		
His	Met Gln Asp Lys Asp	Tyr Lys Pro Arg Gln	Ile Ile Met Val			
17345		17350		17355		
cgt	aat ccc aac cca cat	gga cct cct act gtt	gtt tac tgg gaa	92631		
Arg	Asn Pro Asn Pro His	Gly Pro Pro Thr Val	Val Tyr Trp Glu			
17360		17365		17370		
ttg	cta cca tcg tgt gcc	tgt att ccc ccc ata	gac tgc gct gct	92676		
Leu	Leu Pro Ser Cys Ala	Cys Ile Pro Pro Ile	Asp Cys Ala Ala			
17375		17380		17385		
cat	ctc aag ccc ctt ata	cac acg ttt gtc act	att att aac cat	92721		
His	Leu Lys Pro Leu Ile	His Thr Phe Val Thr	Ile Ile Asn His			
17390		17395		17400		
ctt	cta gat gct cat aat	gat ttt tca agt cca	tca ttg aaa ttt	92766		
Leu	Leu Asp Ala His Asn	Asp Phe Ser Ser Pro	Ser Leu Lys Phe			
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act	gac gat ccc ctt gct	tca tat aac ttc ttg	ttt tta tga	92808		
Thr	Asp Asp Pro Leu Ala	Ser Tyr Asn Phe Leu	Phe Leu			
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Tyr Leu Asn Phe Thr Ser Met His Ser Ile Gln Pro Ile Leu Ser	
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Arg Ile Arg Glu Leu Ala Ala Ile Thr Ile Pro Lys Glu Arg Val	
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Pro Glu Met Gln Arg Asn Glu Leu Pro Phe Ser Val Tyr Leu Ile	
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Ala Gln Asn Val His Ala Lys Leu Ser Thr Ala Tyr Ala Ser Arg	
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Ile Gln Ala Gln Leu Gly Arg Tyr Ala Tyr Asn Trp Thr Thr Thr	
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Pro Pro Ser Ile Glu	Asp Leu Gln Lys Arg	Asp Ile Val Tyr Tyr	
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Trp Glu Val Leu Ile	Asp Ile Thr Lys Arg	Val Phe Gln Met Gly	
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Asp Asp Gly Arg Gly	Gly Thr Ser Thr Phe	Lys Thr Leu Trp Ala	
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Ala Phe Ile Ala Cys	Gly Ser Leu Pro Ala	Phe Thr Arg Ser Asn	
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Val Ile Val Ile Asp	Glu Ala Gly Leu Leu	Gly Arg His Ile Leu	
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Thr Ala Val Val Tyr	Cys Trp Trp Leu Leu	Asn Ala Ile Tyr Gln	
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Ser Pro Gln Tyr Ile	Asn Gly Arg Lys Pro	Val Ile Val Cys Val	
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Gly Ser Pro Thr Gln	Thr Asp Ser Leu Glu	Ser His Phe Gln His	
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Asp Met Gln Arg Ser	His Val Thr Pro Ser	Glu Asn Ile Leu Thr	
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Tyr Ile Ile Cys Asn	Gln Thr Leu Arg Gln	Tyr Thr Asn Ile Ser	
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His Asn Trp Ala Ile	Phe Ile Asn Asn Lys	Arg Cys Gln Glu Asp	
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Asp Phe Gly Asn Leu	Leu Lys Thr Leu Glu	Tyr Gly Leu Pro Ile	
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Thr Glu Ala His Ala	Arg Leu Val Asp Thr	Phe Val Val Pro Ala	
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Ser Tyr Ile Asn Asn	Pro Ala Asn Leu Pro	Gly Trp Thr Arg Leu	
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gcg cat tta aaa cta Ala His Leu Lys Leu 17840	tcg aaa aat gac cat Ser Lys Asn Asp His 17845	ttt tct gtg ttt gcc Phe Ser Val Phe Ala 17850	97249
tta ccg act tat aca Leu Pro Thr Tyr Thr 17855	ttc atc cgg cta acg Phe Ile Arg Leu Thr 17860	gca ttt gat gaa tac Ala Phe Asp Glu Tyr 17865	97294
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Asp Pro Asp Asp Val	Ile Phe Thr Ala Leu	Asn Asp Glu Val Ile	
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Asp Leu Val Tyr Cys	Gln Tyr Glu Phe Ser	Tyr Pro Lys Ser Ser	
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aat gag gtc cat gct	cag ttt ctg tta atg	aaa gct att tac gat	98014
Asn Glu Val His Ala	Gln Phe Leu Leu Met	Lys Ala Ile Tyr Asp	
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ggc cga tat gcc ata	tta gca gag ctt ttc	gaa agc agc ttt aca	98059
Gly Arg Tyr Ala Ile	Leu Ala Glu Leu Phe	Glu Ser Ser Phe Thr	
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acc gcc ccc ttt agc	gcg tat gtc gat aat	gtt aat ttc aac gga	98104
Thr Ala Pro Phe Ser	Ala Tyr Val Asp Asn	Val Asn Phe Asn Gly	
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Ser Glu Leu Leu Ile	Gly Asn Val Arg Gly	Gly Leu Leu Ser Leu	
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Ala Leu Gln Thr Asp	Thr Tyr Thr Leu Leu	Gly Tyr Thr Phe Ala	
18155	18160	18165	
ccc gtg cca gtc ttt	gta gag gaa ctg acc	cga aaa aag ctg tac	98239
Pro Val Pro Val Phe	Val Glu Glu Leu Thr	Arg Lys Lys Leu Tyr	
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Arg Glu Thr Thr Glu	Met Leu Tyr Ala Leu	His Val Pro Leu Met	
18185	18190	18195	
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Val Leu Gln Asp Gln	His Gly Phe Val Ser	Ile Val Asn Ala Asn	
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Val Cys Glu Phe Thr	Glu Ser Ile Glu Asp	Ala Glu Leu Ala Met	
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Ala Thr Thr Val Asp	Tyr Gly Leu Ser Ser	Lys Leu Ala Met Thr	
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Phe Thr Ala Asp Lys	Leu Arg Leu Asn Ser	Val Tyr Val Ala Met	
18260	18265	18270	



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Leu Arg Glu Arg Tyr	Glu Lys Ser Ala Glu	Ile Ser Asp His Ile	
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Leu Ala Ala Leu Arg	Asp Pro Asn Val His	Val Val Tyr	
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18770

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 ctccaatcgc gttaccaaac tcttcttcgc tatccgtaga ttccgagtcg tcgaaatcgt 112327  
 ccacttatcc aacaaattgt gacgttatat atcccaaggc aaaggccgct cccgtcatag 112387  
 caaatacaaa gacaattatt agcgtaatat aacagaattt tttacgatga tataattttat 112447  
 gttgatattt tccaattcga cgcaaaaatt catctgccgt ttcatttttcg ctatcactat 112507  
 aataacactt ttcagccgaa cggctcgggt gtatggctgt tatcggtgta ttatttggtt 112567  
 gcgctcgcg gggtaccacc gcttccatca gtaaggccac ggcctcacc tccatgggtgt 112627  
 tttgtccggc catagaaatc cagattgtaa ggccagcagg ctagttttaa agtggtttaat 112687  
 accacacctt ttgatattta tatacatgca agattctaga ttattcatca ataggtcggt 112747  
 taaagcgcg tttcataaac gttgtcagct ataccgacat tctcaciaag aggtaaagtt 112807  
 accttacggt attattaaat aaaacatgta gacattatta ataatcctag gaacaatcaa 112867  
 atccatattt gtaagttatg ttttaaccct cccctttttg tcattatctc cgccctctta 112927  
 taatcggatc actttataag tgtgtcgggt agtatatttt gtacagttgt tggacaacag 112987  
 gtttttggtt cattaacact atcaacataa gtcgggggtat acaagtata atg aac gac 113045  
 Met Asn Asp

gtt	gat	gca	aca	gac	acc	ttt	ggt	gga	caa	gga	aag	ttc	cgt	ggc	113090
Val	Asp	Ala	Thr	Asp	Thr	Phe	Val	Gly	Gln	Gly	Lys	Phe	Arg	Gly	
18775					18780					18785					

gcc	atc	tca	aca	tca	ccg	tca	cat	att	atg	caa	aca	tgt	ggg	ttt	113135
Ala	Ile	Ser	Thr	Ser	Pro	Ser	His	Ile	Met	Gln	Thr	Cys	Gly	Phe	
18790					18795					18800					

ata	caa	cag	atg	ttt	cca	gtt	gaa	atg	tcg	ccc	ggc	ata	gaa	tct	113180
Ile	Gln	Gln	Met	Phe	Pro	Val	Glu	Met	Ser	Pro	Gly	Ile	Glu	Ser	
18805					18810					18815					

gag	gat	gat	ccc	aat	tat	gac	gtt	aac	atg	gat	ata	cag	tct	ttt	113225
Glu	Asp	Asp	Pro	Asn	Tyr	Asp	Val	Asn	Met	Asp	Ile	Gln	Ser	Phe	
18820					18825					18830					

aat	ata	ttt	gat	ggg	gta	cac	gaa	act	gaa	gcc	gaa	gcc	tct	gtg	113270
Asn	Ile	Phe	Asp	Gly	Val	His	Glu	Thr	Glu	Ala	Glu	Ala	Ser	Val	
18835					18840					18845					

gca	ttg	tgc	gca	gaa	gca	cgc	gtt	gga	att	aat	aaa	gcg	gga	ttt	113315
Ala	Leu	Cys	Ala	Glu	Ala	Arg	Val	Gly	Ile	Asn	Lys	Ala	Gly	Phe	
18850					18855					18860					

gta	ata	tta	aaa	acg	ttt	aca	cca	ggg	gcg	gaa	ggt	ttt	gcg	ttt	113360
Val	Ile	Leu	Lys	Thr	Phe	Thr	Pro	Gly	Ala	Glu	Gly	Phe	Ala	Phe	



18865		18870		18875	
gcg	tgt atg gac agt	aaa	aca tgt gaa cat	gtg	gtc att aaa gcg 113405
Ala	Cys Met Asp Ser	Lys	Thr Cys Glu His	Val	Val Ile Lys Ala
18880		18885		18890	
ggt	caa cgt caa gga	acg	gcc acc gag gca	acc	gtg tta aga gcg 113450
Gly	Gln Arg Gln Gly	Thr	Ala Thr Glu Ala	Thr	Val Leu Arg Ala
18895		18900		18905	
tta	acc cac cca tcc	gtt	gta cag ctt aaa	gga	acg ttt acg tat 113495
Leu	Thr His Pro Ser	Val	Val Gln Leu Lys	Gly	Thr Phe Thr Tyr
18910		18915		18920	
aac	aaa atg aca tgt	ctt	ata tta cca cgt	tac	cga aca gat tta 113540
Asn	Lys Met Thr Cys	Leu	Ile Leu Pro Arg	Tyr	Arg Thr Asp Leu
18925		18930		18935	
tac	tgc tat cta gct	gca	aag cgc aac ctc	ccc	ata tgt gac att 113585
Tyr	Cys Tyr Leu Ala	Ala	Lys Arg Asn Leu	Pro	Ile Cys Asp Ile
18940		18945		18950	
tta	gca att cag cga	tct	gta tta cgc gcg	tta	cag tat ctt cat 113630
Leu	Ala Ile Gln Arg	Ser	Val Leu Arg Ala	Leu	Gln Tyr Leu His
18955		18960		18965	
aat	aac agt att att	cac	cgt gat ata aaa	tct	gaa aat ata ttt 113675
Asn	Asn Ser Ile Ile	His	Arg Asp Ile Lys	Ser	Glu Asn Ile Phe
18970		18975		18980	
att	aac cac cca ggt	gat	gtt tgt gtg gga	gac	ttt gga gca gcg 113720
Ile	Asn His Pro Gly	Asp	Val Cys Val Gly	Asp	Phe Gly Ala Ala
18985		18990		18995	
tgt	ttc ccc gtg gat	att	aat gcc aac agg	tat	tat ggc tgg gct 113765
Cys	Phe Pro Val Asp	Ile	Asn Ala Asn Arg	Tyr	Tyr Gly Trp Ala
19000		19005		19010	
gga	aca atc gcc aca	aac	tct cct gag tta	ttg	gct aga gat cca 113810
Gly	Thr Ile Ala Thr	Asn	Ser Pro Glu Leu	Leu	Ala Arg Asp Pro
19015		19020		19025	
tat	gga cct gcc gtg	gac	ata tgg agt gcc	ggg	att gta tta ttt 113855
Tyr	Gly Pro Ala Val	Asp	Ile Trp Ser Ala	Gly	Ile Val Leu Phe
19030		19035		19040	
gaa	atg gct aca gga	cag	aac tcg tta ttt	gaa	cga gac ggt tta 113900
Glu	Met Ala Thr Gly	Gln	Asn Ser Leu Phe	Glu	Arg Asp Gly Leu
19045		19050		19055	
gat	ggc aat tgt gac	agt	gag cgt caa att	aaa	ctt att ata cga 113945
Asp	Gly Asn Cys Asp	Ser	Glu Arg Gln Ile	Lys	Leu Ile Ile Arg
19060		19065		19070	
cga	tct gga act cat	ccc	aat gaa ttt ccc	att	aac cct aca tca 113990
Arg	Ser Gly Thr His	Pro	Asn Glu Phe Pro	Ile	Asn Pro Thr Ser
19075		19080		19085	
aat	ctt cgt cga caa	tac	att ggt ttg gca	aaa	cgg tct tct cga 114035
Asn	Leu Arg Arg Gln	Tyr	Ile Gly Leu Ala	Lys	Arg Ser Ser Arg



19090	19095	19100	
aaa ccc gga tcc agg cca	ttg tgg aca aat cta	tat gag ttg cca	114080
Lys Pro Gly Ser Arg Pro	Leu Trp Thr Asn Leu	Tyr Glu Leu Pro	
19105	19110	19115	
att gat ttg gag tat ttg	ata tgt aag atg tta	tcg ttt gac gca	114125
Ile Asp Leu Glu Tyr Leu	Ile Cys Lys Met Leu	Ser Phe Asp Ala	
19120	19125	19130	
cgt cat cga cca tca gca	gag gtg ttg ctt aac	cac tct gtt ttc	114170
Arg His Arg Pro Ser Ala	Glu Val Leu Leu Asn	His Ser Val Phe	
19135	19140	19145	
caa act ctt ccc gat cca	tat cca aat cca atg	gaa gtt gga gat	114215
Gln Thr Leu Pro Asp Pro	Tyr Pro Asn Pro Met	Glu Val Gly Asp	
19150	19155	19160	
taa aattcattaa gcctgttaat aaaatattgt ataaattgtg tttataacgt			114268
ataacccggtt aaggcaaata gggtacaaac gcgcaatggt ttgaaatact aatataaata			114328
acataaccaa tagaaactta atacagagtc acgccccatt acaacaagga taaaacacgg			114388
gatcattttc ttaacattgt agtagcgctg aaaagcgctc cctcccccggt ctcacagagc			114448
tgctcttcgg tgtagttggg tatactgggtg cgcttcattt aatcgcg atg			114504
			Met Phe Leu
			19165
atc caa tgt	ttg ata tcg gcc gtt	ata ttt tac ata caa	gtg acc 114549
Ile Gln Cys	Leu Ile Ser Ala Val	Ile Phe Tyr Ile Gln	Val Thr
19170	19175	19180	
aac gct ttg	atc ttc aag ggc gac	cac gtg agc ttg caa	gtt aac 114594
Asn Ala Leu	Ile Phe Lys Gly Asp	His Val Ser Leu Gln	Val Asn
19185	19190	19195	
agc agt ctc	acg tct atc ctt att	ccc atg caa aat gat	aat tat 114639
Ser Ser Leu	Thr Ser Ile Leu Ile	Pro Met Gln Asn Asp	Asn Tyr
19200	19205	19210	
aca gag ata	aaa gga cag ctt gtc	ttt att gga gag caa	cta cct 114684
Thr Glu Ile	Lys Gly Gln Leu Val	Phe Ile Gly Glu Gln	Leu Pro
19215	19220	19225	
acc ggg aca	aac tat agc gga aca	ctg gaa ctg tta tac	gcg gat 114729
Thr Gly Thr	Asn Tyr Ser Gly Thr	Leu Glu Leu Leu Tyr	Ala Asp
19230	19235	19240	
acg gtg gcg	ttt tgt ttc cgg tca	gta caa gta ata aga	tac gac 114774
Thr Val Ala	Phe Cys Phe Arg Ser	Val Gln Val Ile Arg	Tyr Asp
19245	19250	19255	
gga tgt ccc	cgg att aga acg agc	gct ttt att tcg tgt	agg tac 114819
Gly Cys Pro	Arg Ile Arg Thr Ser	Ala Phe Ile Ser Cys	Arg Tyr
19260	19265	19270	
aaa cat tcg	tgg cat tat ggt aac	tca acg gat cgg ata	tca aca 114864
Lys His Ser	Trp His Tyr Gly Asn	Ser Thr Asp Arg Ile	Ser Thr



19275			19280			19285		
gag ccg gat	gct ggt gta atg ttg	aaa att acc aaa ccg	gga ata	114909				
Glu Pro Asp	Ala Gly Val Met Leu	Lys Ile Thr Lys Pro	Gly Ile					
19290	19295	19300						
aat gat gct	ggg gtg tat gta ctt	ctt gtt cgg tta gac	cat agc	114954				
Asn Asp Ala	Gly Val Tyr Val Leu	Leu Val Arg Leu Asp	His Ser					
19305	19310	19315						
aga tcc acc	gat ggt ttc att ctt	ggg gta aat gta tat	aca gcg	114999				
Arg Ser Thr	Asp Gly Phe Ile Leu	Gly Val Asn Val Tyr	Thr Ala					
19320	19325	19330						
ggc tcg cat	cac aac att cac ggg	gtt atc tac act tct	ccg tct	115044				
Gly Ser His	His Asn Ile His Gly	Val Ile Tyr Thr Ser	Pro Ser					
19335	19340	19345						
cta cag aat	gga tat tct aca aga	gcc ctt ttt caa caa	gct cgt	115089				
Leu Gln Asn	Gly Tyr Ser Thr Arg	Ala Leu Phe Gln Gln	Ala Arg					
19350	19355	19360						
ttg tgt gat	tta ccc gcg aca ccc	aaa ggg tcc ggt acc	tcc ctg	115134				
Leu Cys Asp	Leu Pro Ala Thr Pro	Lys Gly Ser Gly Thr	Ser Leu					
19365	19370	19375						
ttt caa cat	atg ctt gat ctt cgt	gcc ggt aaa tcg tta	gag gat	115179				
Phe Gln His	Met Leu Asp Leu Arg	Ala Gly Lys Ser Leu	Glu Asp					
19380	19385	19390						
aac cct tgg	tta cat gag gac gtt	gtt acg aca gaa act	aag tcc	115224				
Asn Pro Trp	Leu His Glu Asp Val	Val Thr Thr Glu Thr	Lys Ser					
19395	19400	19405						
gtt gtt aag	gag ggg ata gaa aat	cac gta tat cca acg	gat atg	115269				
Val Val Lys	Glu Gly Ile Glu Asn	His Val Tyr Pro Thr	Asp Met					
19410	19415	19420						
tcc acg tta	ccc gaa aag tcc ctt	aat gat cct cca gaa	aat cta	115314				
Ser Thr Leu	Pro Glu Lys Ser Leu	Asn Asp Pro Pro Glu	Asn Leu					
19425	19430	19435						
ctt ata att	att cct ata gta gcg	tct gtc atg atc ctc	acc gcc	115359				
Leu Ile Ile	Ile Pro Ile Val Ala	Ser Val Met Ile Leu	Thr Ala					
19440	19445	19450						
atg gtt att	gtt att gta ata agc	gtt aag cga cgt aga	att aaa	115404				
Met Val Ile	Val Ile Val Ile Ser	Val Lys Arg Arg Arg	Ile Lys					
19455	19460	19465						
aaa cat cca	att tat cgc cca aat	aca aaa aca aga agg	ggc ata	115449				
Lys His Pro	Ile Tyr Arg Pro Asn	Thr Lys Thr Arg Arg	Gly Ile					
19470	19475	19480						
caa aat gcg	aca cca gaa tcc gat	gtg atg ttg gag gcc	gcc att	115494				
Gln Asn Ala	Thr Pro Glu Ser Asp	Val Met Leu Glu Ala	Ala Ile					
19485	19490	19495						
gca caa cta	gca acg att cgc gaa	gaa tcc ccc cca cat	tcc gtt	115539				
Ala Gln Leu	Ala Thr Ile Arg Glu	Glu Ser Pro Pro His	Ser Val					



19500	19505	19510	
gta aac ccg	ttt gtt aaa tag	aactaattat cccggatttt	atattaaata 115590
Val Asn Pro	Phe Val Lys		
19515			
aactatatgc	gttttatatta	gcgttttgat tacgcgttgt	gatatgaggg gaaggattaa 115650
gaatctccta	actataagtt	aacacgccca catttgggcg	gggatgtttt atgaagcctt 115710
aaaggccgag	ctggtataca	cgagagcagt ccatggtttt	agacctcggg cgaattgcgt 115770
ggttttaagt	gactatatctc	cgagggtcgc ctgtaat	atg ggg aca gtt aat 115822
		Met Gly	Thr Val Asn
		19520	
aaa cct	gtg gtg ggg gta ttg	atg ggg ttc gga att	atc acg gga 115867
Lys Pro	Val Val Gly Val Leu	Met Gly Phe Gly Ile	Ile Thr Gly
19525	19530	19535	
acg ttg	cgt ata acg aat ccg	gtc aga gca tcc gtc	ttg cga tac 115912
Thr Leu	Arg Ile Thr Asn Pro	Val Arg Ala Ser Val	Leu Arg Tyr
19540	19545	19550	
gat gat	ttt cac acc gat gaa	gac aaa ctg gat aca	aac tcc gta 115957
Asp Asp	Phe His Thr Asp Glu	Asp Lys Leu Asp Thr	Asn Ser Val
19555	19560	19565	
tat gag	cct tac tac cat tca	gat cat gcg gag tct	tca tgg gta 116002
Tyr Glu	Pro Tyr Tyr His Ser	Asp His Ala Glu Ser	Ser Trp Val
19570	19575	19580	
aat cgg	gga gag tct tcg cga	aaa gcg tac gat cat	aac tca cct 116047
Asn Arg	Gly Glu Ser Ser Arg	Lys Ala Tyr Asp His	Asn Ser Pro
19585	19590	19595	
tat ata	tgg cca cgt aat gat	tat gat gga ttt tta	gag aac gca 116092
Tyr Ile	Trp Pro Arg Asn Asp	Tyr Asp Gly Phe Leu	Glu Asn Ala
19600	19605	19610	
cac gaa	cac cat ggg gtg tat	aat cag ggc cgt ggt	atc gat agc 116137
His Glu	His His Gly Val Tyr	Asn Gln Gly Arg Gly	Ile Asp Ser
19615	19620	19625	
ggg gaa	cgg tta atg caa ccc	aca caa atg tct gca	cag gag gat 116182
Gly Glu	Arg Leu Met Gln Pro	Thr Gln Met Ser Ala	Gln Glu Asp
19630	19635	19640	
ctt ggg	gac gat acg ggc atc	cac gtt atc cct acg	tta aac ggc 116227
Leu Gly	Asp Asp Thr Gly Ile	His Val Ile Pro Thr	Leu Asn Gly
19645	19650	19655	
gat gac	aga cat aaa att gta	aat gtg gac caa cgt	caa tac ggt 116272
Asp Asp	Arg His Lys Ile Val	Asn Val Asp Gln Arg	Gln Tyr Gly
19660	19665	19670	
gac gtg	ttt aaa gga gat ctt	aat cca aaa ccc caa	ggc caa aga 116317
Asp Val	Phe Lys Gly Asp Leu	Asn Pro Lys Pro Gln	Gly Gln Arg
19675	19680	19685	



ctc att gag gtg tca gtg gaa	gaa aat cac ccg ttt	act tta cgc	116362
Leu Ile Glu Val Ser Val Glu	Glu Asn His Pro Phe	Thr Leu Arg	
19690	19695	19700	
gca ccg att cag cgg att tat	gga gtc cgg tac acc	gag act tgg	116407
Ala Pro Ile Gln Arg Ile Tyr	Gly Val Arg Tyr Thr	Glu Thr Trp	
19705	19710	19715	
agc ttt ttg ccg tca tta acc	tgt acg gga gac gca	gcg ccc gcc	116452
Ser Phe Leu Pro Ser Leu Thr	Cys Thr Gly Asp Ala	Ala Pro Ala	
19720	19725	19730	
atc cag cat ata tgt tta aaa	cat aca aca tgc ttt	caa gac gtg	116497
Ile Gln His Ile Cys Leu Lys	His Thr Thr Cys Phe	Gln Asp Val	
19735	19740	19745	
gtg gtg gat gtg gat tgc gcg	gaa aat act aaa gag	gat cag ttg	116542
Val Val Asp Val Asp Cys Ala	Glu Asn Thr Lys Glu	Asp Gln Leu	
19750	19755	19760	
gcc gaa atc agt tac cgt ttt	caa ggt aag aag gaa	gcg gac caa	116587
Ala Glu Ile Ser Tyr Arg Phe	Gln Gly Lys Lys Glu	Ala Asp Gln	
19765	19770	19775	
ccg tgg att gtt gta aac acg	agc aca ctg ttt gat	gaa ctc gaa	116632
Pro Trp Ile Val Val Asn Thr	Ser Thr Leu Phe Asp	Glu Leu Glu	
19780	19785	19790	
tta gac ccc ccc gag att gaa	ccg ggt gtc ttg aaa	gta ctt cgg	116677
Leu Asp Pro Pro Glu Ile Glu	Pro Gly Val Leu Lys	Val Leu Arg	
19795	19800	19805	
aca gaa aaa caa tac ttg ggt	gtg tac att tgg aac	atg cgc ggc	116722
Thr Glu Lys Gln Tyr Leu Gly	Val Tyr Ile Trp Asn	Met Arg Gly	
19810	19815	19820	
tcc gat ggt acg tct acc tac	gcc acg ttt ttg gtc	acc tgg aaa	116767
Ser Asp Gly Thr Ser Thr Tyr	Ala Thr Phe Leu Val	Thr Trp Lys	
19825	19830	19835	
ggg gat gaa aaa aca aga aac	cct acg ccc gca gta	act cct caa	116812
Gly Asp Glu Lys Thr Arg Asn	Pro Thr Pro Ala Val	Thr Pro Gln	
19840	19845	19850	
cca aga ggg gct gag ttt cat	atg tgg aat tac cac	tcg cat gta	116857
Pro Arg Gly Ala Glu Phe His	Met Trp Asn Tyr His	Ser His Val	
19855	19860	19865	
ttt tca gtt ggt gat acg ttt	agc ttg gca atg cat	ctt cag tat	116902
Phe Ser Val Gly Asp Thr Phe	Ser Leu Ala Met His	Leu Gln Tyr	
19870	19875	19880	
aag ata cat gaa gcg cca ttt	gat ttg ctg tta gag	tgg ttg tat	116947
Lys Ile His Glu Ala Pro Phe	Asp Leu Leu Leu Glu	Trp Leu Tyr	
19885	19890	19895	
gtc ccc atc gat cct aca tgt	caa cca atg cgg tta	tat tct acg	116992
Val Pro Ile Asp Pro Thr Cys	Gln Pro Met Arg Leu	Tyr Ser Thr	
19900	19905	19910	



tgt ttg	tat cat	ccc aac	gca	ccc caa	tgc ctc	tct	cat atg	aat	117037
Cys Leu	Tyr His	Pro Asn	Ala	Pro Gln	Cys Leu	Ser	His Met	Asn	
19915			19920			19925			
tcc ggt	tgt aca	ttt acc	tcg	cca cat	tta gcc	cag	cgt gtt	gca	117082
Ser Gly	Cys Thr	Phe Thr	Ser	Pro His	Leu Ala	Gln	Arg Val	Ala	
19930			19935			19940			
agc aca	gtg tat	caa aat	tgt	gaa cat	gca gat	aac	tac acc	gca	117127
Ser Thr	Val Tyr	Gln Asn	Cys	Glu His	Ala Asp	Asn	Tyr Thr	Ala	
19945			19950			19955			
tat tgt	ctg gga	ata tct	cat	atg gag	cct agc	ttt	ggg cta	atc	117172
Tyr Cys	Leu Gly	Ile Ser	His	Met Glu	Pro Ser	Phe	Gly Leu	Ile	
19960			19965			19970			
tta cac	gac ggg	ggc acc	acg	tta aag	ttt gta	gat	aca ccc	gag	117217
Leu His	Asp Gly	Gly Thr	Thr	Leu Lys	Phe Val	Asp	Thr Pro	Glu	
19975			19980			19985			
agt ttg	tcg gga	tta tac	gtt	ttt gtg	gtg tat	ttt	aac ggg	cat	117262
Ser Leu	Ser Gly	Leu Tyr	Val	Phe Val	Val Tyr	Phe	Asn Gly	His	
19990			19995			20000			
gtt gaa	gcc gta	gca tac	act	gtt gta	tcc aca	gta	gat cat	ttt	117307
Val Glu	Ala Val	Ala Tyr	Thr	Val Val	Ser Thr	Val	Asp His	Phe	
20005			20010			20015			
gta aac	gca att	gaa gag	cgt	gga ttt	ccg cca	acg	gcc ggt	cag	117352
Val Asn	Ala Ile	Glu Glu	Arg	Gly Phe	Pro Pro	Thr	Ala Gly	Gln	
20020			20025			20030			
cca ccg	gcg act	act aaa	ccc	aag gaa	att acc	ccc	gta aac	ccc	117397
Pro Pro	Ala Thr	Thr Lys	Pro	Lys Glu	Ile Thr	Pro	Val Asn	Pro	
20035			20040			20045			
gga acg	tca cca	ctt cta	cga	tat gcc	gca tgg	acc	gga ggg	ctt	117442
Gly Thr	Ser Pro	Leu Leu	Arg	Tyr Ala	Ala Trp	Thr	Gly Gly	Leu	
20050			20055			20060			
gca gca	gta gta	ctt tta	tgt	ctc gta	ata ttt	tta	atc tgt	acg	117487
Ala Ala	Val Val	Leu Leu	Cys	Leu Val	Ile Phe	Leu	Ile Cys	Thr	
20065			20070			20075			
gct aaa	cga atg	agg gtt	aaa	gcc tat	agg gta	gac	aag tcc	ccg	117532
Ala Lys	Arg Met	Arg Val	Lys	Ala Tyr	Arg Val	Asp	Lys Ser	Pro	
20080			20085			20090			
tat aac	caa agc	atg tat	tac	gct ggc	ctt cca	gtg	gac gat	ttc	117577
Tyr Asn	Gln Ser	Met Tyr	Tyr	Ala Gly	Leu Pro	Val	Asp Asp	Phe	
20095			20100			20105			
gag gac	tcg gaa	tct acg	gat	acg gaa	gaa gag	ttt	ggg aac	gcg	117622
Glu Asp	Ser Glu	Ser Thr	Asp	Thr Glu	Glu Glu	Phe	Gly Asn	Ala	
20110			20115			20120			
att gga	ggg agt	cac ggg	ggg	tcg agt	tac acg	gtg	tat ata	gat	117667
Ile Gly	Gly Ser	His Gly	Gly	Ser Ser	Tyr Thr	Val	Tyr Ile	Asp	
20125			20130			20135			



aag acc cgg tga tcaccgaacc ggggcaacgc cgagcgtgta aatttaaata 117719  
 Lys Thr Arg  
 20140

aaaaacagta cgcttttatac cgggtgtatgt tttaaattta tttttttttt ctatataaag 117779  
 ggatgggggtg tcaggatctc tcgtaggttc ttgggactcc aagggacccg cagcccaggt 117839  
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Pro	Gly	Ala	Ala	Gly	Pro	Glu	Ala	Gly	Asp	Val	Pro	Thr	Trp	Ala	
21255					21260					21265					
agg	gtg	ttt	tgc	cgc	cac	gcc	ctg	ctg	gaa	ccc	gac	cct	gcc	gca	124192
Arg	Val	Phe	Cys	Arg	His	Ala	Leu	Leu	Glu	Pro	Asp	Pro	Ala	Ala	
21270					21275					21280					
gaa	cca	ctc	gtg	ctt	cca	ccc	gtg	gcc	ggg	cgg	tcg	gtg	gcg	ctg	124237
Glu	Pro	Leu	Val	Leu	Pro	Pro	Val	Ala	Gly	Arg	Ser	Val	Ala	Leu	
21285					21290					21295					
tat	gcg	tcg	gcg	gac	gag	gct	cgg	aat	gcc	ctc	ccc	ccg	att	ccc	124282
Tyr	Ala	Ser	Ala	Asp	Glu	Ala	Arg	Asn	Ala	Leu	Pro	Pro	Ile	Pro	
21300					21305					21310					



aga gta atg tgg ccg ccc ggt ttt ggg gcc gcg gag acg gtg ttg 124327  
 Arg Val Met Trp Pro Pro Gly Phe Gly Ala Ala Glu Thr Val Leu  
 21315 21320 21325  
 gag ggg agc gac gga aca cgg ttc gtg ttc gga cac cac ggg ggc 124372  
 Glu Gly Ser Asp Gly Thr Arg Phe Val Phe Gly His His Gly Gly  
 21330 21335 21340  
 tcg gaa cgg ccg tca gaa acc cag gcg ggg cga cag cgg cgc acc 124417  
 Ser Glu Arg Pro Ser Glu Thr Gln Ala Gly Arg Gln Arg Arg Thr  
 21345 21350 21355  
 gca gac gac aga gaa cac gct ttg gag ctg gac gat tgg gag gtg 124462  
 Ala Asp Asp Arg Glu His Ala Leu Glu Leu Asp Asp Trp Glu Val  
 21360 21365 21370  
 ggg tgt gaa gac gcg tgg gac agc gag gag ggg ggc ggg gac gac 124507  
 Gly Cys Glu Asp Ala Trp Asp Ser Glu Glu Gly Gly Gly Asp Asp  
 21375 21380 21385  
 ggg gac gca ccg ggg tca tcc ttt ggg gtg agc atc gtg tcg gtg 124552  
 Gly Asp Ala Pro Gly Ser Ser Phe Gly Val Ser Ile Val Ser Val  
 21390 21395 21400  
 gcc ccg ggt gtg ctg cga gac cgc cgg gtg ggt ttg cgc ccg gcg 124597  
 Ala Pro Gly Val Leu Arg Asp Arg Arg Val Gly Leu Arg Pro Ala  
 21405 21410 21415  
 gtc aag gtg gag ctg ttg tcc tcg tcc tcg tcc tcc gag gac gag 124642  
 Val Lys Val Glu Leu Leu Ser Ser Ser Ser Ser Ser Glu Asp Glu  
 21420 21425 21430  
 gac gat gtg tgg gga ggg cgc ggg ggg agg agc ccc ccg cag agt 124687  
 Asp Asp Val Trp Gly Gly Arg Gly Gly Arg Ser Pro Pro Gln Ser  
 21435 21440 21445  
 cgg ggg tga cggagtcgcc tccttttctc gtgagcgcca ctggcgcgcg 124736  
 Arg Gly  
 21450  
 gactgtttgt tgtaataaaa agcggaacgg tttttatgaa aaaagtgtct gtctgtctgt 124796  
 gcgggcgggc gacgggcggg ctggtcggac cccccccga aaataacccc cccccggttt 124856  
 ctgggcgccc ggcggacccc gggagagg 124884

<210> 9  
 <211> 238  
 <212> PRT  
 <213> Varicella zoster

<400> 9

Met His Val Ile Ser Glu Thr Leu Ala Tyr Gly His Val Pro Ala Phe  
 1 5 10 15

Ile Met Gly Ser Thr Leu Val Arg Pro Ser Leu Asn Ala Thr Ala Glu  
 20 25 30



Glu Asn Pro Ala Ser Glu Thr Arg Cys Leu Leu Arg Val Leu Ala Gly  
 35 40 45

Arg Thr Val Asp Leu Pro Gly Gly Gly Thr Leu His Ile Thr Cys Thr  
 50 55 60

Lys Thr Tyr Val Ile Ile Gly Lys Tyr Ser Lys Pro Gly Glu Arg Leu  
 65 70 75 80

Ser Leu Ala Arg Leu Ile Gly Arg Ala Met Thr Pro Gly Gly Ala Arg  
 85 90 95

Thr Phe Ile Ile Leu Ala Met Lys Glu Lys Arg Ser Thr Thr Leu Gly  
 100 105 110

Tyr Glu Cys Gly Thr Gly Leu His Leu Leu Ala Pro Ser Met Gly Thr  
 115 120 125

Phe Leu Arg Thr His Gly Leu Ser Asn Arg Asp Leu Cys Leu Trp Arg  
 130 135 140

Gly Asn Ile Tyr Asp Met His Met Gln Arg Leu Met Phe Trp Glu Asn  
 145 150 155 160

Ile Ala Gln Asn Thr Thr Glu Thr Pro Cys Ile Thr Ser Thr Leu Thr  
 165 170 175

Cys Asn Leu Thr Glu Asp Ser Gly Glu Ala Ala Leu Thr Thr Ser Asp  
 180 185 190

Arg Pro Thr Leu Pro Thr Leu Thr Ala Gln Gly Arg Pro Thr Val Ser  
 195 200 205

Asn Ile Arg Gly Ile Leu Lys Gly Ser Pro Arg Gln Gln Pro Val Cys  
 210 215 220

His Arg Val Arg Phe Ala Glu Pro Thr Glu Gly Val Leu Met  
 225 230 235

<210> 10

<211> 259

<212> PRT

<213> Varicella zoster

<400> 10



153



Thr Gln Asp Val Gln Arg Thr Thr Pro Ala Ile Lys Lys Ser His Val  
245 250 255

Met Leu Val

<210> 11  
<211> 87  
<212> PRT  
<213> Varicella zoster

<400> 11

Met Gly Ser Ile Thr Ala Ser Phe Ile Leu Ile Thr Met Gln Ile Leu  
1 5 10 15

Phe Phe Cys Glu Asp Ser Ser Gly Glu Pro Asn Phe Ala Glu Arg Asn  
20 25 30

Phe Trp His Ala Ser Cys Ser Ala Arg Gly Val Tyr Ile Asp Gly Ser  
35 40 45

Met Ile Thr Thr Leu Phe Phe Tyr Ala Ser Leu Leu Gly Val Cys Val  
50 55 60

Ala Leu Ile Ser Leu Ala Tyr His Ala Cys Phe Arg Leu Phe Thr Arg  
65 70 75 80

Ser Val Leu Arg Ser Thr Trp  
85

<210> 12  
<211> 302  
<212> PRT  
<213> Varicella zoster

<400> 12

Met Ala Ser Ser Asp Gly Asp Arg Leu Cys Arg Ser Asn Ala Val Arg  
1 5 10 15

Arg Lys Thr Thr Pro Ser Tyr Ser Gly Gln Tyr Arg Thr Ala Arg Arg  
20 25 30

Ser Val Val Val Gly Pro Pro Asp Asp Ser Asp Asp Ser Leu Gly Tyr  
35 40 45

Ile Thr Thr Val Gly Ala Asp Ser Pro Ser Pro Val Tyr Ala Asp Leu  
154



50

55

60

Tyr Phe Glu His Lys Asn Thr Thr Pro Arg Val His Gln Pro Asn Asp  
65 70 75 80

Ser Ser Gly Ser Glu Asp Asp Phe Glu Asp Ile Asp Glu Val Val Ala  
85 90 95

Ala Phe Arg Glu Ala Arg Leu Arg His Glu Leu Val Glu Asp Ala Val  
100 105 110

Tyr Glu Asn Pro Leu Ser Val Glu Lys Pro Ser Arg Ser Phe Thr Lys  
115 120 125

Asn Ala Ala Val Lys Pro Lys Leu Glu Asp Ser Pro Lys Arg Ala Pro  
130 135 140

Pro Gly Ala Gly Ala Ile Ala Ser Gly Arg Pro Ile Ser Phe Ser Thr  
145 150 155 160

Ala Pro Lys Thr Ala Thr Ser Ser Trp Cys Gly Pro Thr Pro Ser Tyr  
165 170 175

Asn Lys Arg Val Phe Cys Glu Ala Val Arg Arg Val Ala Ala Met Gln  
180 185 190

Ala Gln Lys Ala Ala Glu Ala Ala Trp Asn Ser Asn Pro Pro Arg Asn  
195 200 205

Asn Ala Glu Leu Asp Arg Leu Leu Thr Gly Ala Val Ile Arg Ile Thr  
210 215 220

Val His Glu Gly Leu Asn Leu Ile Gln Ala Ala Asn Glu Ala Asp Leu  
225 230 235 240

Gly Glu Gly Ala Ser Val Ser Lys Arg Gly His Asn Arg Lys Thr Gly  
245 250 255

Asp Leu Gln Gly Gly Met Gly Asn Glu Pro Met Tyr Ala Gln Val Arg  
260 265 270

Lys Pro Lys Ser Arg Thr Asp Thr Gln Thr Thr Gly Arg Ile Thr Asn  
275 280 285

Arg Ser Arg Ala Arg Ser Ala Ser Arg Thr Asp Thr Arg Lys  
155



290

295

300

<210> 13  
 <211> 410  
 <212> PRT  
 <213> Varicella zoster

<400> 13

Met Glu Cys Asn Leu Gly Thr Glu His Pro Ser Thr Asp Thr Trp Asn  
 1 5 10 15

Arg Ser Lys Thr Glu Gln Ala Val Val Asp Ala Phe Asp Glu Ser Leu  
 20 25 30

Phe Gly Asp Val Ala Ser Asp Ile Gly Phe Glu Thr Ser Leu Tyr Ser  
 35 40 45

His Ala Val Lys Thr Ala Pro Ser Pro Pro Trp Val Ala Ser Pro Lys  
 50 55 60

Ile Leu Tyr Gln Gln Leu Ile Arg Asp Leu Asp Phe Ser Glu Gly Pro  
 65 70 75 80

Arg Leu Leu Ser Cys Leu Glu Thr Trp Asn Glu Asp Leu Phe Ser Cys  
 85 90 95

Phe Pro Ile Asn Glu Asp Leu Tyr Ser Asp Met Met Val Leu Ser Pro  
 100 105 110

Asp Pro Asp Asp Val Ile Ser Thr Val Ser Thr Lys Asp His Val Glu  
 115 120 125

Met Phe Asn Leu Thr Thr Arg Gly Ser Val Arg Leu Pro Ser Pro Pro  
 130 135 140

Lys Gln Pro Thr Gly Leu Pro Ala Tyr Val Gln Glu Val Gln Asp Ser  
 145 150 155 160

Phe Thr Val Glu Leu Arg Ala Arg Glu Glu Ala Tyr Thr Lys Leu Leu  
 165 170 175

Val Thr Tyr Cys Lys Ser Ile Ile Arg Tyr Leu Gln Gly Thr Ala Lys  
 180 185 190

Arg Thr Thr Ile Gly Leu Asn Ile Gln Asn Pro Asp Gln Lys Ala Tyr  
 195 200 205



Thr Gln Leu Arg Gln Ser Ile Leu Leu Arg Tyr Tyr Arg Glu Val Ala  
 210 215 220

Ser Leu Ala Arg Leu Leu Tyr Leu His Leu Tyr Leu Thr Val Thr Arg  
 225 230 235 240

Glu Phe Ser Trp Arg Leu Tyr Ala Ser Gln Ser Ala His Pro Asp Val  
 245 250 255

Phe Ala Ala Leu Lys Phe Thr Trp Thr Glu Arg Arg Gln Phe Thr Cys  
 260 265 270

Ala Phe His Pro Val Leu Cys Asn His Gly Ile Val Leu Leu Glu Gly  
 275 280 285

Lys Pro Leu Thr Ala Ser Ala Leu Arg Glu Ile Asn Tyr Arg Arg Arg  
 290 295 300

Glu Leu Gly Leu Pro Leu Val Arg Cys Gly Leu Val Glu Glu Asn Lys  
 305 310 315 320

Ser Pro Leu Val Gln Gln Pro Ser Phe Ser Val His Leu Pro Arg Ser  
 325 330 335

Val Gly Phe Leu Thr His His Ile Lys Arg Lys Leu Asp Ala Tyr Ala  
 340 345 350

Val Lys His Pro Gln Glu Pro Arg His Val Arg Ala Asp His Pro Tyr  
 355 360 365

Ala Lys Val Val Glu Asn Arg Asn Tyr Gly Ser Ser Ile Glu Ala Met  
 370 375 380

Ile Leu Ala Pro Pro Ser Pro Ser Glu Ile Leu Pro Gly Asp Pro Pro  
 385 390 395 400

Arg Pro Pro Thr Cys Gly Phe Leu Thr Arg  
 405 410

<210> 14

<211> 819

<212> PRT

<213> Varicella zoster

<400> 14



Met Gln Ser Gly His Tyr Asn Arg Arg Gln Ser Arg Arg Gln Arg Ile  
1 5 10 15  
Ser Ser Asn Thr Thr Asp Ser Pro Arg His Thr His Gly Thr Arg Tyr  
20 25 30  
Arg Ser Thr Asn Trp Tyr Thr His Pro Pro Gln Ile Leu Ser Asn Ser  
35 40 45  
Glu Thr Leu Val Ala Val Gln Glu Leu Leu Asn Ser Glu Met Asp Gln  
50 55 60  
Asp Ser Ser Ser Asp Ala Ser Asp Asp Phe Pro Gly Tyr Ala Leu His  
65 70 75 80  
His Ser Thr Tyr Asn Gly Ser Glu Gln Asn Thr Ser Thr Ser Arg His  
85 90 95  
Glu Asn Arg Ile Phe Lys Leu Thr Glu Arg Glu Ala Asn Glu Glu Ile  
100 105 110  
Asn Ile Asn Thr Asp Ala Ile Asp Asp Glu Gly Glu Ala Glu Glu Gly  
115 120 125  
Glu Ala Glu Glu Asp Ala Ile Asp Asp Glu Gly Glu Ala Glu Glu Gly  
130 135 140  
Glu Ala Glu Glu Asp Ala Ile Asp Asp Glu Gly Glu Ala Glu Glu Gly  
145 150 155 160  
Glu Ala Glu Glu Asp Ala Ile Asp Asp Glu Gly Glu Ala Glu Glu Gly  
165 170 175  
Glu Ala Glu Glu Gly Glu Ala Glu Glu Gly Glu Ala Glu Glu Asp Ala  
180 185 190  
Ile Asp Asp Glu Gly Glu Ala Glu Glu Asp Ala Ala Glu Glu Asp Ala  
195 200 205  
Ile Asp Asp Glu Gly Glu Ala Glu Glu Asp Tyr Phe Ser Val Ser Gln  
210 215 220  
Val Cys Ser Arg Asp Ala Asp Glu Val Tyr Phe Thr Leu Asp Pro Glu  
225 230 235 240



Ile Ser Tyr Ser Thr Asp Leu Arg Ile Ala Lys Val Met Glu Pro Ala  
 245 250 255

Val Ser Lys Glu Leu Asn Val Ser Lys Arg Cys Val Glu Pro Val Thr  
 260 265 270

Leu Thr Gly Ser Met Leu Ala His Asn Gly Phe Asp Glu Ser Trp Phe  
 275 280 285

Ala Met Arg Glu Cys Thr Arg Arg Glu Tyr Ile Thr Val Gln Gly Leu  
 290 295 300

Tyr Asp Pro Ile His Leu Arg Tyr Gln Phe Asp Thr Ser Arg Met Thr  
 305 310 315 320

Pro Pro Gln Ile Leu Arg Thr Ile Pro Ala Leu Pro Asn Met Thr Leu  
 325 330 335

Gly Glu Leu Leu Leu Ile Phe Pro Ile Glu Phe Met Ala Gln Pro Ile  
 340 345 350

Ser Ile Glu Arg Ile Leu Val Glu Asp Val Phe Leu Asp Arg Arg Ala  
 355 360 365

Ser Ser Lys Thr His Lys Tyr Gly Pro Arg Trp Asn Ser Val Tyr Ala  
 370 375 380

Leu Pro Tyr Asn Ala Gly Lys Met Tyr Val Gln His Ile Pro Gly Phe  
 385 390 395 400

Tyr Asp Val Ser Leu Arg Ala Val Gly Gln Gly Thr Ala Ile Trp His  
 405 410 415

His Met Ile Leu Ser Thr Ala Ala Cys Ala Ile Ser Asn Arg Ile Ser  
 420 425 430

His Gly Asp Gly Leu Gly Phe Leu Leu Asp Ala Ala Ile Arg Ile Ser  
 435 440 445

Ala Asn Cys Ile Phe Leu Gly Arg Asn Asp Asn Phe Gly Val Gly Asp  
 450 455 460

Pro Cys Trp Leu Glu Asp His Leu Ala Gly Leu Pro Arg Glu Ala Val  
 465 470 475 480



Pro Asp Val Leu Gln Val Thr Gln Leu Val Leu Pro Asn Arg Gly Pro  
485 490 495

Thr Val Ala Ile Met Arg Gly Phe Phe Gly Ala Leu Ala Tyr Trp Pro  
500 505 510

Glu Leu Arg Ile Ala Ile Ser Glu Pro Ser Thr Ser Leu Val Arg Tyr  
515 520 525

Ala Thr Gly His Met Glu Leu Ala Glu Trp Phe Leu Phe Ser Arg Thr  
530 535 540

His Ser Leu Lys Pro Gln Phe Thr Pro Thr Glu Arg Glu Met Leu Ala  
545 550 555 560

Ser Phe Phe Thr Leu Tyr Val Thr Leu Gly Gly Gly Met Leu Asn Trp  
565 570 575

Ile Cys Arg Ala Thr Ala Met Tyr Leu Ala Ala Pro Tyr His Ser Arg  
580 585 590

Ser Ala Tyr Ile Ala Val Cys Glu Ser Leu Pro Tyr Tyr Tyr Ile Pro  
595 600 605

Val Asn Ser Asp Leu Leu Cys Asp Leu Glu Val Leu Leu Leu Gly Glu  
610 615 620

Val Asp Leu Pro Thr Val Cys Glu Ser Tyr Ala Thr Ile Ala His Glu  
625 630 635 640

Leu Thr Gly Tyr Glu Ala Val Arg Thr Ala Ala Thr Asn Phe Met Ile  
645 650 655

Glu Phe Ala Asp Cys Tyr Lys Glu Ser Glu Thr Asp Leu Met Val Ser  
660 665 670

Ala Tyr Leu Gly Ala Val Leu Leu Leu Gln Arg Val Leu Gly His Ala  
675 680 685

Asn Leu Leu Leu Leu Leu Leu Ser Gly Ala Ala Leu Tyr Gly Gly Cys  
690 695 700

Ser Ile Tyr Ile Pro Arg Gly Ile Leu Asp Ala Tyr Asn Thr Leu Met  
705 710 715 720



Leu Ala Ala Ser Pro Leu Tyr Ala His Gln Thr Leu Thr Ser Phe Trp  
725 730 735

Lys Asp Arg Asp Asp Ala Met Gln Thr Leu Gly Ile Arg Pro Thr Thr  
740 745 750

Asp Val Leu Pro Lys Glu Gln Asp Arg Ile Val Gln Ala Ser Pro Ile  
755 760 765

Glu Met Asn Phe Arg Phe Val Gly Leu Glu Thr Ile Tyr Pro Arg Glu  
770 775 780

Gln Pro Ile Pro Ser Val Asp Leu Ala Glu Asn Leu Met Gln Tyr Arg  
785 790 795 800

Asn Glu Ile Leu Gly Leu Asp Trp Lys Ser Val Ala Met His Leu Leu  
805 810 815

Arg Lys Tyr

<210> 15  
<211> 661  
<212> PRT  
<213> Varicella zoster

<400> 15

Met Phe Ser Arg Phe Ala Arg Ser Phe Ser Ser Asp Asp Arg Thr Arg  
1 5 10 15

Lys Ser Tyr Asp Gly Ser Tyr Gln Ser Phe Asn Ala Gly Glu Arg Asp  
20 25 30

Leu Pro Thr Pro Thr Arg Asp Trp Cys Ser Ile Ser Gln Arg Ile Thr  
35 40 45

Ser Glu Arg Val Arg Asp Gly Cys Leu Ile Pro Thr Pro Gly Glu Ala  
50 55 60

Leu Glu Thr Ala Val Lys Ala Leu Ser Glu Lys Thr Asp Ser Leu Thr  
65 70 75 80

Ser Pro Val Leu Gln Ser Thr Glu Arg His Ser Val Leu Leu Gly Leu  
85 90 95



His His Asn Asn Val Pro Glu Ser Leu Val Val Ser Cys Met Ser Asn  
 100 105 110

Asp Val His Asp Gly Phe Met Gln Arg Tyr Met Glu Thr Ile Gln Arg  
 115 120 125

Cys Leu Asp Asp Leu Lys Leu Ser Gly Asp Gly Leu Trp Trp Val Tyr  
 130 135 140

Glu Asn Thr Tyr Trp Gln Tyr Leu Lys Tyr Thr Thr Gly Ala Glu Val  
 145 150 155 160

Pro Val Thr Ser Glu Lys Val Asn Lys Lys Ser Lys Ser Thr Val Leu  
 165 170 175

Leu Phe Ser Ser Val Val Ala Asn Lys Pro Ile Ser Arg His Pro Phe  
 180 185 190

Lys Ser Lys Val Ile Asn Ser Asp Tyr Arg Gly Ile Cys Gln Glu Leu  
 195 200 205

Arg Glu Ala Leu Gly Ala Val Gln Lys Tyr Met Tyr Phe Met Arg Pro  
 210 215 220

Asp Asp Pro Thr Asn Pro Ser Pro Asp Thr Arg Ile Arg Val Gln Glu  
 225 230 235 240

Ile Ala Ala Tyr Thr Ala Thr Gly Tyr Gly Trp Met Leu Trp Phe Leu  
 245 250 255

Asp Val Val Asp Ala Arg Val Cys Arg His Leu Lys Leu Gln Phe Arg  
 260 265 270

Arg Ile Arg Gly Pro Arg Ala Ser Val Ile Pro Asp Asp Leu Leu Arg  
 275 280 285

Arg His Leu Lys Thr Gly Pro Ala Val Ser Ala Gly Thr Gly Val Ala  
 290 295 300

Phe Ile Leu Ala Ala Thr Thr Ala Ser Ala Leu Thr Ala Leu Leu Arg  
 305 310 315 320

Ile Ser Val Leu Trp Arg Lys Glu Glu Trp Arg Asp Gly Leu Asn Gly  
 325 330 335



Thr Ala Ala Ala Ile Val Ala Ala Val Glu Leu Ile Thr Leu Leu His  
 340 345 350

His His Phe Gln Tyr Leu Ile Asn Met Met Leu Ile Gly Tyr Ala Cys  
 355 360 365

Trp Gly Asp Gly Gly Leu Asn Asp Pro Tyr Ile Leu Lys Ala Leu Arg  
 370 375 380

Ala Gln Gly Arg Phe Leu Tyr Phe Ala Gly Gln Leu Val Arg Thr Met  
 385 390 395 400

Ser Thr His Ser Trp Val Val Leu Glu Thr Ser Thr His Met Trp Phe  
 405 410 415

Ser Arg Ala Val Ala Gln Ser Ile Leu Ala His Gly Gly Lys Pro Thr  
 420 425 430

Lys Tyr Tyr Ala Gln Val Leu Ala Ala Ser Lys Arg Tyr Thr Pro Leu  
 435 440 445

His Leu Arg Arg Ile Ser Glu Pro Ser Ser Val Ser Asp Gln Pro Tyr  
 450 455 460

Ile Arg Phe Asn Arg Leu Gly Ser Pro Ile Gly Thr Gly Ile Gly Asn  
 465 470 475 480

Leu Glu Cys Val Cys Leu Thr Gly Asn Tyr Leu Ser Asp Asp Val Asn  
 485 490 495

Ala Ser Ser His Val Ile Asn Thr Glu Ala Pro Leu Asn Ser Ile Ala  
 500 505 510

Pro Asp Thr Asn Arg Gln Arg Thr Ser Arg Val Leu Val Arg Pro Asp  
 515 520 525

Thr Gly Leu Asp Val Thr Val Arg Lys Asn His Cys Leu Asp Ile Gly  
 530 535 540

His Thr Asp Gly Ser Pro Val Asp Pro Thr Tyr Pro Asp His Tyr Thr  
 545 550 555 560

Arg Ile Lys Ala Glu Tyr Glu Gly Pro Val Arg Asp Glu Ser Asn Thr  
 565 570 575



Met Phe Asp Gln Arg Ser Asp Leu Arg His Ile Glu Thr Gln Ala Ser  
580 585 590

Leu Asn Asp His Val Tyr Glu Asn Ile Pro Pro Lys Glu Val Gly Phe  
595 600 605

Asn Ser Ser Ser Asp Leu Asp Val Asp Ser Leu Asn Gly Tyr Thr Ser  
610 615 620

Gly Asp Met His Thr Asp Asp Asp Leu Ser Pro Asp Phe Ile Pro Asn  
625 630 635 640

Asp Val Pro Val Arg Cys Lys Thr Thr Val Thr Phe Arg Lys Asn Thr  
645 650 655

Pro Lys Ser His His  
660

<210> 16  
<211> 301  
<212> PRT  
<213> Varicella zoster

<400> 16

Met Gly Asp Leu Ser Cys Trp Thr Lys Val Pro Gly Phe Thr Leu Thr  
1 5 10 15

Gly Glu Leu Gln Tyr Leu Lys Gln Val Asp Asp Ile Leu Arg Tyr Gly  
20 25 30

Val Arg Lys Arg Asp Arg Thr Gly Ile Gly Thr Leu Ser Leu Phe Gly  
35 40 45

Met Gln Ala Arg Tyr Asn Leu Arg Asn Glu Phe Pro Leu Leu Thr Thr  
50 55 60

Lys Arg Val Phe Trp Arg Ala Val Val Glu Glu Leu Leu Trp Phe Ile  
65 70 75 80

Arg Gly Ser Thr Asp Ser Lys Glu Leu Ala Ala Lys Asp Ile His Ile  
85 90 95

Trp Asp Ile Tyr Gly Ser Ser Lys Phe Leu Asn Arg Asn Gly Phe His  
100 105 110

Lys Arg His Thr Gly Asp Leu Gly Pro Ile Tyr Gly Phe Gln Trp Arg  
164



115

120

125

His Phe Gly Ala Glu Tyr Lys Asp Cys Gln Ser Asn Tyr Leu Gln Gln  
 130 135 140

Gly Ile Asp Gln Leu Gln Thr Val Ile Asp Thr Ile Lys Thr Asn Pro  
 145 150 155 160

Glu Ser Arg Arg Met Ile Ile Ser Ser Trp Asn Pro Lys Asp Ile Pro  
 165 170 175

Leu Met Val Leu Pro Pro Cys His Thr Leu Cys Gln Phe Tyr Val Ala  
 180 185 190

Asn Gly Glu Leu Ser Cys Gln Val Tyr Gln Arg Ser Gly Asp Met Gly  
 195 200 205

Leu Gly Val Pro Phe Asn Ile Ala Gly Tyr Ala Leu Leu Thr Tyr Ile  
 210 215 220

Val Ala His Val Thr Gly Leu Lys Thr Gly Asp Leu Ile His Thr Met  
 225 230 235 240

Gly Asp Ala His Ile Tyr Leu Asn His Ile Asp Ala Leu Lys Val Gln  
 245 250 255

Leu Ala Arg Ser Pro Lys Pro Phe Pro Cys Leu Lys Ile Ile Arg Asn  
 260 265 270

Val Thr Asp Ile Asn Asp Phe Lys Trp Asp Asp Phe Gln Leu Asp Gly  
 275 280 285

Tyr Asn Pro His Pro Pro Leu Lys Met Glu Met Ala Leu  
 290 295 300

<210> 17

<211> 455

<212> PRT

<213> Varicella zoster

<400> 17

Met Gly Leu Phe Gly Leu Thr Arg Phe Ile His Glu His Lys Leu Val  
 1 5 10 15

Lys Pro Ser Ile Ile Ser Thr Pro Pro Gly Val Leu Thr Pro Val Ala  
 20 25 30

165







Tyr Pro Glu Phe Leu Val Ala Phe Val Arg Cys Gln Thr Asp Leu His  
 275 280 285

Thr Ser Asp Asn Leu Lys Ser Val Gln Gln Val Ile Gln Asp Thr Gly  
 290 295 300

Leu Lys Val Pro His Gln Met Asp Thr Ser Thr Arg Ser Pro Thr Tyr  
 305 310 315 320

Asp Ser Trp Arg His Gly Glu Val Phe Lys Ser Leu Thr Val Ala Thr  
 325 330 335

Ser Gly Lys Thr Glu Asn Gly Val Ser Val Ser Lys Tyr Ala Ser Asn  
 340 345 350

Arg Ser Glu Val Thr Val Asp Ala Ser Trp Ala Leu Asn Leu Leu Pro  
 355 360 365

Pro Ser Ser Ser Pro Leu Asp Asn Leu Glu Arg Ala Phe Val Glu His  
 370 375 380

Ile Ile Ala Val Val Thr Pro Leu Thr Arg Gly Arg Leu Lys Leu Met  
 385 390 395 400

Lys Arg Val Asn Ile Met Gln Asn Thr Ala Asp Pro Tyr Met Val Ile  
 405 410 415

Asn Thr Leu Tyr His Asn Leu Lys Gly Glu Lys Met Ala Arg Gln Tyr  
 420 425 430

Ala Arg Ile Phe Lys Gln Phe Ile Pro Thr Pro Leu Pro Leu Asn Thr  
 435 440 445

Val Leu Thr Lys Tyr Trp Asn  
 450 455

<210> 18  
 <211> 1038  
 <212> PRT  
 <213> Varicella zoster

<400> 18

Met Glu Glu Pro Ile Cys Tyr Asp Thr Gln Lys Leu Leu Asp Asp Leu  
 1 5 10 15



Ser Asn Leu Lys Val Gln Glu Ala Asp Asn Glu Arg Pro Trp Ser Pro  
20 25 30

Glu Lys Thr Glu Ile Ala Arg Val Lys Val Val Lys Phe Leu Arg Ser  
35 40 45

Thr Gln Lys Ile Pro Ala Lys His Phe Ile Gln Ile Trp Glu Pro Leu  
50 55 60

His Ser Asn Ile Cys Phe Val Tyr Ser Asn Thr Phe Leu Ala Glu Ala  
65 70 75 80

Ala Phe Thr Ala Glu Asn Leu Pro Gly Leu Leu Phe Trp Arg Leu Asp  
85 90 95

Leu Asp Trp Thr Ile Glu Glu Pro Gly Asn Ser Leu Lys Ile Leu Thr  
100 105 110

Gln Leu Ser Ser Val Val Gln Asp Ser Glu Thr Leu His Arg Leu Ser  
115 120 125

Ala Asn Lys Leu Arg Thr Ser Ser Lys Phe Gly Pro Val Ser Ile His  
130 135 140

Phe Ile Ile Thr Asp Trp Ile Asn Met Tyr Glu Val Ala Leu Lys Asp  
145 150 155 160

Ala Thr Thr Ala Ile Glu Ser Pro Phe Thr His Ala Arg Ile Gly Met  
165 170 175

Leu Glu Ser Ala Ile Ala Ala Leu Thr Gln His Lys Phe Ala Ile Ile  
180 185 190

Tyr Asp Met Pro Phe Val Gln Glu Gly Ile Arg Val Leu Thr Gln Tyr  
195 200 205

Ala Gly Trp Leu Leu Pro Phe Asn Val Met Trp Asn Gln Ile Gln Asn  
210 215 220

Ser Ser Leu Thr Pro Leu Thr Arg Ala Leu Phe Ile Ile Cys Met Ile  
225 230 235 240

Asp Glu Tyr Leu Thr Glu Thr Pro Val His Ser Ile Ser Glu Leu Phe  
245 250 255



Ala Asp Thr Val Asn Leu Ile Lys Asp Glu Ala Phe Val Ser Ile Glu  
 260 265 270

Glu Ala Val Thr Asn Pro Arg Thr Val His Glu Ser Arg Ile Ser Ser  
 275 280 285

Ala Leu Ala Tyr Arg Asp Pro Tyr Val Phe Glu Thr Ser Pro Gly Met  
 290 295 300

Leu Ala Arg Arg Leu Arg Leu Asp Asn Gly Ile Trp Glu Ser Asn Leu  
 305 310 315 320

Leu Ser Leu Ser Thr Pro Gly Ile His Ile Glu Ala Leu Leu His Leu  
 325 330 335

Leu Asn Ser Asp Pro Glu Ala Glu Thr Thr Ser Gly Ser Asn Val Ala  
 340 345 350

Glu His Thr Arg Gly Ile Trp Glu Lys Val Gln Ala Ser Thr Ser Pro  
 355 360 365

Ser Met Leu Ile Ser Thr Leu Ala Glu Ser Gly Phe Thr Arg Phe Ser  
 370 375 380

Cys Lys Leu Leu Arg Arg Phe Ile Ala His His Thr Leu Ala Gly Phe  
 385 390 395 400

Ile His Gly Ser Val Val Ala Asp Glu His Ile Thr Asp Phe Gln Gln  
 405 410 415

Thr Leu Gly Cys Leu Ala Leu Val Gly Gly Leu Ala Tyr Gln Leu Val  
 420 425 430

Glu Thr Tyr Ala Pro Thr Thr Glu Tyr Val Leu Thr Tyr Thr Arg Thr  
 435 440 445

Val Asn Glu Thr Glu Lys Arg Tyr Glu Thr Leu Leu Pro Ala Leu Gly  
 450 455 460

Leu Pro Pro Gly Gly Leu Gly Gln Ile Met Arg Arg Cys Phe Ala Pro  
 465 470 475 480

Arg Pro Leu Ile Glu Ser Ile Gln Ala Thr Arg Val Ile Leu Leu Asn  
 485 490 495



Glu Ile Ser His Ala Glu Ala Arg Glu Thr Thr Tyr Phe Lys Gln Thr  
500 505 510

His Asn Gln Ser Ser Gly Ala Leu Leu Pro Gln Ala Gly Gln Ser Ala  
515 520 525

Val Arg Glu Ala Val Leu Thr Trp Phe Asp Leu Arg Met Asp Ser Arg  
530 535 540

Trp Gly Ile Thr Pro Pro Val Asp Val Gly Met Thr Pro Pro Ile Cys  
545 550 555 560

Val Asp Pro Pro Ala Thr Gly Leu Glu Ala Val Met Ile Thr Glu Ala  
565 570 575

Leu Lys Ile Ala Tyr Pro Thr Glu Tyr Asn Arg Ser Ser Val Phe Val  
580 585 590

Glu Pro Ser Phe Val Pro Tyr Ile Ile Ala Thr Ser Thr Leu Asp Ala  
595 600 605

Leu Ser Ala Thr Ile Ala Leu Ser Phe Asp Thr Arg Gly Ile Gln Gln  
610 615 620

Ala Leu Ser Ile Leu Gln Trp Ala Arg Asp Tyr Gly Ser Gly Thr Val  
625 630 635 640

Pro Asn Ala Asp Gly Tyr Arg Thr Lys Leu Ser Ala Leu Ile Thr Ile  
645 650 655

Leu Glu Pro Phe Thr Arg Thr His Pro Pro Val Leu Leu Pro Ser His  
660 665 670

Val Ser Thr Ile Asp Ser Leu Ile Cys Glu Leu His Arg Thr Val Gly  
675 680 685

Ile Ala Val Asp Leu Leu Pro Gln His Val Arg Pro Leu Val Pro Asp  
690 695 700

Arg Pro Ser Ile Thr Asn Ser Val Phe Leu Ala Thr Leu Tyr Tyr Asp  
705 710 715 720

Glu Leu Tyr Gly Arg Trp Thr Arg Leu Asp Lys Thr Ser Gln Ala Leu  
725 730 735



Val	Glu	Asn	Phe	Thr	Ser	Asn	Ala	Leu	Val	Val	Ser	Arg	Tyr	Met	Leu	740	745	750	
Met	Leu	Gln	Lys	Phe	Phe	Ala	Cys	Arg	Phe	Tyr	Pro	Thr	Pro	Asp	Leu	755	760	765	
Gln	Ala	Val	Gly	Ile	Cys	Asn	Pro	Lys	Val	Glu	Arg	Asp	Glu	Gln	Phe	770	775	780	
Gly	Val	Trp	Arg	Leu	Asn	Asp	Leu	Ala	Asp	Ala	Val	Gly	His	Ile	Val	785	790	795	800
Gly	Thr	Ile	Gln	Gly	Ile	Arg	Thr	Gln	Met	Arg	Val	Gly	Ile	Ser	Ser	805	810	815	
Leu	Arg	Thr	Ile	Met	Ala	Asp	Ala	Ser	Ser	Ala	Leu	Arg	Glu	Cys	Glu	820	825	830	
Asn	Leu	Met	Thr	Lys	Thr	Ser	Thr	Ser	Ala	Ile	Gly	Pro	Leu	Phe	Ser	835	840	845	
Thr	Met	Ala	Ser	Arg	Tyr	Ala	Arg	Phe	Thr	Gln	Asp	Gln	Met	Asp	Ile	850	855	860	
Leu	Met	Arg	Val	Asp	Lys	Leu	Thr	Thr	Gly	Glu	Asn	Ile	Pro	Gly	Leu	865	870	875	880
Ala	Asn	Val	Glu	Ile	Phe	Leu	Asn	Arg	Trp	Glu	Arg	Ile	Ala	Thr	Ala	885	890	895	
Cys	Arg	His	Ala	Thr	Ala	Val	Pro	Ser	Ala	Glu	Ser	Ile	Ala	Thr	Val	900	905	910	
Cys	Asn	Glu	Leu	Arg	Arg	Gly	Leu	Lys	Asn	Ile	Gln	Glu	Asp	Arg	Val	915	920	925	
Asn	Ala	Pro	Thr	Ser	Tyr	Met	Ser	His	Ala	Arg	Asn	Leu	Glu	Asp	His	930	935	940	
Lys	Ala	Ala	Val	Ser	Phe	Val	Met	Asp	Ser	Arg	Gln	Gln	Phe	Ile	Val	945	950	955	960
Asp	Ser	Gly	Pro	Gln	Met	Gly	Ala	Val	Leu	Thr	Ser	Gln	Cys	Asn	Ile	965	970	975	



Gly Thr Trp Glu Asn Val Asn Ala Thr Phe Leu His Asp Asn Val Lys  
 980 985 990

Ile Thr Thr Thr Val Arg Asp Val Ile Ser Glu Ala Pro Thr Leu Ile  
 995 1000 1005

Ile Gly Gln Arg Trp Leu Arg Pro Asp Glu Ile Leu Ser Asn Val  
 1010 1015 1020

Asp Leu Arg Leu Gly Val Pro Gly Asn Thr Ser Gly Ser Asp Pro  
 1025 1030 1035

<210> 19  
 <211> 2763  
 <212> PRT  
 <213> Varicella zoster

<400> 19

Met Asp Ile Ile Pro Pro Ile Ala Val Thr Val Ala Gly Val Gly Ser  
 1 5 10 15

Arg Asn Gln Phe Asp Gly Ala Leu Gly Pro Ala Ser Gly Leu Ser Cys  
 20 25 30

Leu Arg Thr Ser Leu Ser Phe Leu His Met Thr Tyr Ala His Gly Ile  
 35 40 45

Asn Ala Thr Leu Ser Ser Asp Met Ile Asp Gly Cys Leu Gln Glu Gly  
 50 55 60

Ala Ala Trp Thr Thr Asp Leu Ser Asn Met Gly Arg Gly Val Pro Asp  
 65 70 75 80

Met Cys Ala Leu Val Asp Leu Pro Asn Arg Ile Ser Tyr Ile Lys Leu  
 85 90 95

Gly Asp Thr Thr Ser Thr Cys Cys Val Leu Ser Arg Ile Tyr Gly Asp  
 100 105 110

Ser His Phe Phe Thr Val Pro Asp Glu Gly Phe Met Cys Thr Gln Ile  
 115 120 125

Pro Ala Arg Ala Phe Phe Asp Asp Val Trp Met Gly Arg Glu Glu Ser  
 130 135 140



Tyr Thr Ile Ile Thr Val Asp Ser Thr Gly Met Ala Ile Tyr Arg Gln  
 145 150 155 160

Gly Asn Ile Ser Phe Ile Phe Asp Pro His Gly His Gly Thr Ile Gly  
 165 170 175

Gln Ala Val Val Val Arg Val Asn Thr Thr Asp Val Tyr Ser Tyr Ile  
 180 185 190

Ala Ser Glu Tyr Thr His Arg Pro Asp Asn Val Glu Ser Gln Trp Ala  
 195 200 205

Ala Ala Leu Val Phe Phe Val Thr Ala Asn Asp Gly Pro Val Ser Glu  
 210 215 220

Glu Ala Leu Ser Ser Ala Val Thr Leu Ile Tyr Gly Ser Cys Asp Thr  
 225 230 235 240

Tyr Phe Thr Asp Glu Gln Tyr Cys Glu Lys Leu Val Thr Ala Gln His  
 245 250 255

Pro Leu Leu Leu Ser Pro Pro Asn Ser Thr Thr Ile Val Leu Asn Lys  
 260 265 270

Ser Ser Ile Val Pro Leu His Gln Asn Val Gly Glu Ser Val Ser Leu  
 275 280 285

Glu Ala Thr Leu His Ser Thr Leu Thr Asn Thr Val Ala Leu Asp Pro  
 290 295 300

Arg Cys Ser Tyr Ser Glu Val Asp Pro Trp His Ala Val Leu Glu Thr  
 305 310 315 320

Thr Ser Thr Gly Ser Gly Val Leu Asp Cys Arg Arg Arg Arg Arg Pro  
 325 330 335

Ser Trp Thr Pro Pro Ser Ser Glu Glu Asn Leu Ala Cys Ile Asp Asp  
 340 345 350

Gly Leu Val Asn Asn Thr His Ser Thr Asp Asn Leu His Lys Pro Ala  
 355 360 365

Lys Lys Val Leu Lys Phe Lys Pro Thr Val Asp Val Pro Asp Lys Thr  
 370 375 380



Gln Val Ala His Val Leu Pro Arg Leu Arg Glu Val Ala Asn Thr Pro  
 385 390 395 400

Asp Val Val Leu Asn Val Ser Asn Val Asp Thr Pro Glu Ser Ser Pro  
 405 410 415

Thr Phe Ser Arg Asn Met Asn Val Gly Ser Ser Leu Lys Asp Arg Lys  
 420 425 430

Pro Phe Leu Phe Glu Gln Ser Gly Asp Val Asn Met Val Val Glu Lys  
 435 440 445

Leu Leu Gln His Gly His Glu Ile Ser Asn Gly Tyr Val Gln Asn Ala  
 450 455 460

Val Gly Thr Leu Asp Thr Val Ile Thr Gly His Thr Asn Val Pro Ile  
 465 470 475 480

Trp Val Thr Arg Pro Leu Val Met Pro Asp Glu Lys Asp Pro Leu Glu  
 485 490 495

Leu Phe Ile Asn Leu Thr Ile Leu Arg Leu Thr Gly Phe Val Val Glu  
 500 505 510

Asn Gly Thr Arg Thr His His Gly Ala Thr Ser Val Val Ser Asp Phe  
 515 520 525

Ile Gly Pro Leu Gly Glu Ile Leu Thr Gly Phe Pro Ser Ala Ala Glu  
 530 535 540

Leu Ile Arg Val Thr Ser Leu Ile Leu Thr Asn Met Pro Gly Ala Glu  
 545 550 555 560

Tyr Ala Ile Lys Thr Val Leu Arg Lys Lys Cys Thr Ile Gly Met Leu  
 565 570 575

Ile Ile Ala Lys Phe Gly Leu Val Ala Met Arg Val Gln Asp Thr Thr  
 580 585 590

Gly Ala Leu His Ala Glu Leu Asp Val Leu Glu Ala Asp Leu Gly Gly  
 595 600 605

Ser Ser Pro Ile Asp Leu Tyr Ser Arg Leu Ser Thr Gly Leu Ile Ser  
 610 615 620



Ile Leu Asn Ser Pro Ile Ile Ser His Pro Gly Leu Phe Ala Glu Leu  
 625 630 635 640

Ile Pro Thr Arg Thr Gly Ser Leu Ser Glu Arg Ile Arg Leu Leu Cys  
 645 650 655

Glu Leu Val Ser Ala Arg Glu Thr Arg Tyr Met Arg Glu His Thr Ala  
 660 665 670

Leu Val Ser Ser Val Lys Ala Leu Glu Asn Ala Leu Arg Ser Thr Arg  
 675 680 685

Asn Lys Ile Asp Ala Ile Gln Ile Pro Glu Val Pro Gln Glu Pro Pro  
 690 695 700

Glu Glu Thr Asp Ile Pro Pro Glu Glu Leu Ile Arg Arg Val Tyr Glu  
 705 710 715 720

Ile Arg Ser Glu Val Thr Met Leu Leu Thr Ser Ala Val Thr Glu Tyr  
 725 730 735

Phe Thr Arg Gly Val Leu Tyr Ser Thr Arg Ala Leu Ile Ala Glu Gln  
 740 745 750

Ser Pro Arg Arg Phe Arg Val Ala Thr Ala Ser Thr Ala Pro Ile Gln  
 755 760 765

Arg Leu Leu Asp Ser Leu Pro Glu Phe Asp Ala Lys Leu Thr Ala Ile  
 770 775 780

Ile Ser Ser Leu Ser Ile His Pro Pro Pro Glu Thr Ile Gln Asn Leu  
 785 790 795 800

Pro Val Val Ser Leu Leu Lys Glu Leu Ile Lys Glu Gly Glu Asp Leu  
 805 810 815

Asn Thr Asp Thr Ala Leu Val Ser Trp Leu Ser Val Val Gly Glu Ala  
 820 825 830

Gln Thr Ala Gly Tyr Leu Ser Arg Arg Glu Phe Asp Glu Leu Ser Arg  
 835 840 845

Thr Ile Lys Thr Ile Asn Thr Arg Ala Thr Gln Arg Ala Ser Ala Glu  
 850 855 860



Ala Glu Leu Ser Cys Phe Asn Thr Leu Ser Ala Ala Val Asp Gln Ala  
865 870 875 880

Val Lys Asp Tyr Glu Thr Tyr Asn Asn Gly Glu Val Lys Tyr Pro Glu  
885 890 895

Ile Thr Arg Asp Asp Leu Leu Ala Thr Ile Val Arg Ala Thr Asp Asp  
900 905 910

Leu Val Arg Gln Ile Lys Ile Leu Ser Asp Pro Met Ile Gln Ser Gly  
915 920 925

Leu Gln Pro Ser Ile Lys Arg Arg Leu Glu Thr Arg Leu Lys Glu Val  
930 935 940

Gln Thr Tyr Ala Asn Glu Ala Arg Thr Thr Gln Asp Thr Ile Lys Ser  
945 950 955 960

Arg Lys Gln Ala Ala Tyr Asn Lys Leu Gly Gly Leu Leu Arg Pro Val  
965 970 975

Thr Gly Phe Val Gly Leu Arg Ala Ala Val Asp Leu Leu Pro Glu Leu  
980 985 990

Ala Ser Glu Leu Asp Val Gln Gly Ala Leu Val Asn Leu Arg Thr Lys  
995 1000 1005

Val Leu Glu Ala Pro Val Glu Ile Arg Ser Gln Leu Thr Gly Asp  
1010 1015 1020

Phe Trp Ala Leu Phe Asn Gln Tyr Arg Asp Ile Leu Glu His Pro  
1025 1030 1035

Gly Asn Ala Arg Thr Ser Val Leu Gly Gly Leu Gly Ala Cys Phe  
1040 1045 1050

Thr Ala Ile Ile Glu Ile Val Pro Ile Pro Thr Glu Tyr Arg Pro  
1055 1060 1065

Ser Leu Leu Ala Phe Phe Gly Asp Val Ala Asp Val Leu Ala Ser  
1070 1075 1080

Asp Ile Ala Thr Val Ser Thr Asn Pro Glu Ser Glu Ser Ala Ile  
1085 1090 1095



Asn	Ala	Val	Val	Ala	Thr	Leu	Ser	Lys	Ala	Thr	Leu	Val	Ser	Ser
1100						1105					1110			
Thr	Val	Pro	Ala	Leu	Ser	Phe	Val	Leu	Ser	Leu	Tyr	Lys	Lys	Tyr
1115						1120					1125			
Gln	Ala	Leu	Gln	Gln	Glu	Ile	Thr	Asn	Thr	His	Lys	Leu	Thr	Glu
1130						1135					1140			
Leu	Gln	Lys	Gln	Leu	Gly	Asp	Asp	Phe	Ser	Thr	Leu	Ala	Val	Ser
1145						1150					1155			
Ser	Gly	His	Leu	Lys	Phe	Ile	Ser	Ser	Ser	Asn	Val	Asp	Asp	Tyr
1160						1165					1170			
Glu	Ile	Asn	Asp	Ala	Ile	Leu	Ser	Ile	Gln	Thr	Asn	Val	His	Ala
1175						1180					1185			
Leu	Met	Asp	Thr	Val	Lys	Leu	Val	Glu	Val	Glu	Leu	Gln	Lys	Leu
1190						1195					1200			
Pro	Pro	His	Cys	Ile	Ala	Gly	Thr	Ser	Thr	Leu	Ser	Arg	Val	Val
1205						1210					1215			
Lys	Asp	Leu	His	Lys	Leu	Val	Thr	Met	Ala	His	Glu	Lys	Lys	Glu
1220						1225					1230			
Gln	Ala	Lys	Val	Leu	Ile	Thr	Asp	Cys	Glu	Arg	Ala	His	Lys	Gln
1235						1240					1245			
Gln	Thr	Thr	Arg	Val	Leu	Tyr	Glu	Arg	Trp	Thr	Arg	Asp	Ile	Ile
1250						1255					1260			
Ala	Cys	Leu	Glu	Ala	Met	Glu	Thr	Arg	His	Ile	Phe	Asn	Gly	Thr
1265						1270					1275			
Glu	Leu	Ala	Arg	Leu	Arg	Asp	Met	Ala	Ala	Ala	Gly	Gly	Phe	Asp
1280						1285					1290			
Ile	His	Ala	Val	Tyr	Pro	Gln	Ala	Arg	Gln	Val	Val	Ala	Ala	Cys
1295						1300					1305			
Glu	Thr	Thr	Ala	Val	Thr	Ala	Leu	Asp	Thr	Val	Phe	Arg	His	Asn
1310						1315					1320			



Pro	Tyr	Thr	Pro	Glu	Asn	Thr	Asn	Ile	Pro	Pro	Pro	Leu	Ala	Leu
1325						1330					1335			
Leu	Arg	Gly	Leu	Thr	Trp	Phe	Asp	Asp	Phe	Ser	Ile	Thr	Ala	Pro
1340						1345					1350			
Val	Phe	Thr	Val	Met	Phe	Pro	Gly	Val	Ser	Ile	Glu	Gly	Leu	Leu
1355						1360					1365			
Leu	Leu	Met	Arg	Ile	Arg	Ala	Val	Val	Leu	Leu	Ser	Ala	Asp	Thr
1370						1375					1380			
Ser	Ile	Asn	Gly	Ile	Pro	Asn	Tyr	Arg	Asp	Met	Ile	Leu	Arg	Thr
1385						1390					1395			
Ser	Gly	Asp	Leu	Leu	Gln	Ile	Pro	Ala	Leu	Ala	Gly	Tyr	Val	Asp
1400						1405					1410			
Phe	Tyr	Thr	Arg	Ser	Tyr	Asp	Gln	Phe	Ile	Thr	Glu	Ser	Val	Thr
1415						1420					1425			
Leu	Ser	Glu	Leu	Arg	Ala	Asp	Ile	Arg	Gln	Ala	Ala	Gly	Ala	Lys
1430						1435					1440			
Leu	Thr	Glu	Ala	Asn	Lys	Ala	Leu	Glu	Glu	Val	Thr	His	Val	Arg
1445						1450					1455			
Ala	His	Glu	Thr	Ala	Lys	Leu	Ala	Leu	Lys	Glu	Gly	Val	Phe	Ile
1460						1465					1470			
Thr	Leu	Pro	Ser	Glu	Gly	Leu	Leu	Ile	Arg	Ala	Ile	Glu	Tyr	Phe
1475						1480					1485			
Thr	Thr	Phe	Asp	His	Lys	Arg	Phe	Ile	Gly	Thr	Ala	Tyr	Glu	Arg
1490						1495					1500			
Val	Leu	Gln	Thr	Met	Val	Asp	Arg	Asp	Leu	Lys	Glu	Ala	Asn	Ala
1505						1510					1515			
Glu	Leu	Ala	Gln	Phe	Arg	Met	Val	Cys	Gln	Ala	Thr	Lys	Asn	Arg
1520						1525					1530			
Ala	Ile	Gln	Ile	Leu	Gln	Asn	Ile	Val	Asp	Thr	Ala	Asn	Ala	Thr
1535						1540					1545			



Glu	Gln	Gln	Glu	Asp	Val	Asp	Phe	Thr	Asn	Leu	Lys	Thr	Leu	Leu
1550						1555					1560			
Lys	Leu	Thr	Pro	Pro	Pro	Lys	Thr	Ile	Ala	Leu	Ala	Ile	Asp	Arg
1565						1570					1575			
Ser	Thr	Ser	Val	Gln	Asp	Ile	Val	Thr	Gln	Phe	Ala	Leu	Leu	Leu
1580						1585					1590			
Gly	Arg	Leu	Glu	Glu	Glu	Thr	Gly	Thr	Leu	Asp	Ile	Gln	Ala	Val
1595						1600					1605			
Asp	Trp	Met	Tyr	Gln	Ala	Arg	Asn	Ile	Ile	Asp	Ser	His	Pro	Leu
1610						1615					1620			
Ser	Val	Arg	Ile	Asp	Gly	Thr	Gly	Pro	Leu	His	Thr	Tyr	Lys	Asp
1625						1630					1635			
Arg	Val	Asp	Lys	Leu	Tyr	Ala	Leu	Arg	Thr	Lys	Leu	Asp	Leu	Leu
1640						1645					1650			
Arg	Arg	Arg	Ile	Glu	Thr	Gly	Glu	Val	Thr	Trp	Asp	Asp	Ala	Trp
1655						1660					1665			
Thr	Thr	Phe	Lys	Arg	Glu	Thr	Gly	Asp	Met	Leu	Ala	Ser	Gly	Asp
1670						1675					1680			
Thr	Tyr	Ala	Thr	Ser	Val	Asp	Ser	Ile	Lys	Ala	Leu	Gln	Ala	Ser
1685						1690					1695			
Ala	Ser	Val	Val	Asp	Met	Leu	Cys	Ser	Glu	Pro	Glu	Phe	Phe	Leu
1700						1705					1710			
Leu	Pro	Val	Glu	Thr	Lys	Asn	Arg	Leu	Gln	Lys	Lys	Gln	Gln	Glu
1715						1720					1725			
Arg	Lys	Thr	Ala	Leu	Asp	Val	Val	Leu	Gln	Lys	Gln	Arg	Gln	Phe
1730						1735					1740			
Glu	Glu	Thr	Ala	Ser	Arg	Leu	Arg	Ala	Leu	Ile	Glu	Arg	Ile	Pro
1745						1750					1755			
Thr	Glu	Ser	Asp	His	Asp	Val	Leu	Arg	Met	Leu	Leu	Arg	Asp	Phe
1760						1765					1770			



Asp	Gln	Phe	Thr	His	Leu	Pro	Ile	Trp	Ile	Lys	Thr	Gln	Tyr	Met
1775						1780					1785			
Thr	Phe	Arg	Asn	Leu	Leu	Met	Val	Arg	Leu	Gly	Leu	Tyr	Ala	Ser
1790						1795					1800			
Tyr	Ala	Glu	Ile	Phe	Pro	Pro	Ala	Ser	Pro	Asn	Gly	Val	Phe	Ala
1805						1810					1815			
Pro	Ile	Pro	Ala	Met	Ser	Gly	Val	Cys	Leu	Glu	Asp	Gln	Ser	Arg
1820						1825					1830			
Cys	Ile	Arg	Ala	Arg	Val	Ala	Ala	Phe	Met	Gly	Glu	Ala	Ser	Val
1835						1840					1845			
Val	Gln	Thr	Phe	Arg	Glu	Ala	Arg	Ser	Ser	Ile	Asp	Ala	Leu	Phe
1850						1855					1860			
Gly	Lys	Asn	Leu	Thr	Phe	Tyr	Leu	Asp	Thr	Asp	Gly	Val	Pro	Leu
1865						1870					1875			
Arg	Tyr	Arg	Val	Cys	Tyr	Lys	Ser	Val	Gly	Val	Lys	Leu	Gly	Thr
1880						1885					1890			
Met	Leu	Cys	Ser	Gln	Gly	Gly	Leu	Ser	Leu	Arg	Pro	Ala	Leu	Pro
1895						1900					1905			
Asp	Glu	Gly	Ile	Val	Glu	Glu	Thr	Thr	Leu	Ser	Ala	Leu	Arg	Val
1910						1915					1920			
Ala	Asn	Glu	Val	Asn	Glu	Leu	Arg	Ile	Glu	Tyr	Glu	Ser	Ala	Ile
1925						1930					1935			
Lys	Ser	Gly	Phe	Ser	Ala	Phe	Ser	Thr	Phe	Val	Arg	His	Arg	His
1940						1945					1950			
Ala	Glu	Trp	Gly	Lys	Thr	Asn	Ala	Arg	Arg	Ala	Ile	Ala	Glu	Ile
1955						1960					1965			
Tyr	Ala	Gly	Leu	Ile	Thr	Thr	Thr	Leu	Thr	Arg	Gln	Tyr	Gly	Val
1970						1975					1980			
His	Trp	Asp	Lys	Leu	Ile	Tyr	Ser	Phe	Glu	Lys	His	His	Leu	Thr
1985						1990					1995			



Ser	Val	Met	Gly	Asn	Gly	Leu	Thr	Lys	Pro	Ile	Gln	Arg	Arg	Gly
2000						2005					2010			
Asp	Val	Arg	Val	Leu	Glu	Leu	Thr	Leu	Ser	Asp	Ile	Val	Thr	Ile
2015						2020					2025			
Leu	Val	Ala	Thr	Thr	Pro	Val	His	Leu	Leu	Asn	Phe	Ala	Arg	Leu
2030						2035					2040			
Asp	Leu	Ile	Lys	Gln	His	Glu	Tyr	Met	Ala	Arg	Thr	Leu	Arg	Pro
2045						2050					2055			
Val	Ile	Glu	Ala	Ala	Phe	Arg	Gly	Arg	Leu	Leu	Val	Arg	Ser	Leu
2060						2065					2070			
Asp	Gly	Asp	Pro	Lys	Gly	Asn	Ala	Arg	Ala	Phe	Phe	Asn	Ala	Ala
2075						2080					2085			
Pro	Ser	Lys	His	Lys	Leu	Pro	Leu	Ala	Leu	Gly	Ser	Asn	Gln	Asp
2090						2095					2100			
Pro	Thr	Gly	Gly	Arg	Ile	Phe	Ala	Phe	Arg	Met	Ala	Asp	Trp	Lys
2105						2110					2115			
Leu	Val	Lys	Met	Pro	Gln	Lys	Ile	Thr	Asp	Pro	Phe	Ala	Pro	Trp
2120						2125					2130			
Gln	Leu	Ser	Pro	Pro	Pro	Gly	Val	Lys	Ala	Asn	Val	Asp	Ala	Val
2135						2140					2145			
Thr	Arg	Ile	Met	Ala	Thr	Asp	Arg	Leu	Ala	Thr	Ile	Thr	Val	Leu
2150						2155					2160			
Gly	Arg	Met	Cys	Leu	Pro	Pro	Ile	Ser	Leu	Val	Ser	Met	Trp	Asn
2165						2170					2175			
Thr	Leu	Gln	Pro	Glu	Glu	Phe	Ala	Tyr	Arg	Thr	Gln	Asp	Asp	Val
2180						2185					2190			
Asp	Ile	Ile	Val	Asp	Ala	Arg	Leu	Asp	Leu	Ser	Ser	Thr	Leu	Asn
2195						2200					2205			
Ala	Arg	Phe	Asp	Thr	Ala	Pro	Ser	Asn	Thr	Thr	Leu	Glu	Trp	Asn
2210						2215					2220			



Thr	Asp	Arg	Lys	Val	Ile	Thr	Asp	Ala	Tyr	Ile	Gln	Thr	Gly	Ala
2225						2230					2235			
Thr	Thr	Val	Phe	Thr	Val	Thr	Gly	Ala	Ala	Pro	Thr	His	Val	Ser
2240						2245					2250			
Asn	Val	Thr	Ala	Phe	Asp	Ile	Ala	Thr	Thr	Ala	Ile	Leu	Phe	Gly
2255						2260					2265			
Ala	Pro	Leu	Val	Ile	Ala	Met	Glu	Leu	Thr	Ser	Val	Phe	Ser	Gln
2270						2275					2280			
Asn	Ser	Gly	Leu	Thr	Leu	Gly	Leu	Lys	Leu	Phe	Asp	Ser	Arg	His
2285						2290					2295			
Met	Ala	Thr	Asp	Ser	Gly	Ile	Ser	Ser	Ala	Val	Ser	Pro	Asp	Ile
2300						2305					2310			
Val	Ser	Trp	Gly	Leu	Arg	Leu	Leu	His	Met	Asp	Pro	His	Pro	Ile
2315						2320					2325			
Glu	Asn	Ala	Cys	Leu	Ile	Val	Gln	Leu	Glu	Lys	Leu	Ser	Ala	Leu
2330						2335					2340			
Ile	Ala	Asn	Lys	Pro	Leu	Thr	Asn	Asn	Pro	Pro	Cys	Leu	Leu	Leu
2345						2350					2355			
Leu	Asp	Glu	His	Met	Asn	Pro	Ser	Tyr	Val	Leu	Trp	Glu	Arg	Lys
2360						2365					2370			
Asp	Ser	Ile	Pro	Ala	Pro	Asp	Tyr	Val	Val	Phe	Trp	Gly	Pro	Glu
2375						2380					2385			
Ser	Leu	Ile	Asp	Leu	Pro	Tyr	Ile	Asp	Ser	Asp	Glu	Asp	Ser	Phe
2390						2395					2400			
Pro	Ser	Cys	Pro	Asp	Asp	Pro	Phe	Tyr	Ser	Gln	Ile	Ile	Ala	Gly
2405						2410					2415			
Tyr	Ala	Pro	Gln	Gly	Pro	Pro	Asn	Leu	Asp	Thr	Thr	Asp	Phe	Tyr
2420						2425					2430			
Pro	Thr	Glu	Pro	Leu	Phe	Lys	Ser	Pro	Val	Gln	Val	Val	Arg	Ser
2435						2440					2445			



Ser	Lys	Cys	Lys	Lys	Met	Pro	Val	Arg	Pro	Ala	Gln	Pro	Ala	Gln
2450						2455					2460			
Pro	Ala	Gln	Pro	Ala	Gln	Pro	Ala	Gln	Thr	Val	Gln	Pro	Ala	Gln
2465						2470					2475			
Pro	Ile	Glu	Pro	Gly	Thr	Gln	Ile	Val	Val	Gln	Asn	Phe	Lys	Lys
2480						2485					2490			
Pro	Gln	Ser	Val	Lys	Thr	Thr	Leu	Ser	Gln	Lys	Asp	Ile	Pro	Leu
2495						2500					2505			
Tyr	Val	Glu	Thr	Glu	Ser	Glu	Thr	Ala	Val	Leu	Ile	Pro	Lys	Gln
2510						2515					2520			
Leu	Thr	Thr	Ser	Ile	Lys	Thr	Thr	Val	Cys	Lys	Ser	Ile	Thr	Pro
2525						2530					2535			
Pro	Asn	Asn	Gln	Leu	Ser	Asp	Trp	Lys	Asn	Asn	Pro	Gln	Gln	Asn
2540						2545					2550			
Gln	Thr	Leu	Asn	Gln	Ala	Phe	Ser	Lys	Pro	Ile	Leu	Glu	Ile	Thr
2555						2560					2565			
Ser	Ile	Pro	Thr	Asp	Asp	Ser	Ile	Ser	Tyr	Arg	Thr	Trp	Ile	Glu
2570						2575					2580			
Lys	Ser	Asn	Gln	Thr	Gln	Lys	Arg	His	Gln	Asn	Asp	Pro	Arg	Met
2585						2590					2595			
Tyr	Asn	Ser	Lys	Thr	Val	Phe	His	Pro	Val	Asn	Asn	Gln	Leu	Pro
2600						2605					2610			
Ser	Trp	Val	Asp	Thr	Ala	Ala	Asp	Ala	Pro	Gln	Thr	Asp	Leu	Leu
2615						2620					2625			
Thr	Asn	Tyr	Lys	Thr	Arg	Gln	Pro	Ser	Pro	Asn	Phe	Pro	Arg	Asp
2630						2635					2640			
Val	His	Thr	Trp	Gly	Val	Ser	Ser	Asn	Pro	Phe	Asn	Ser	Pro	Asn
2645						2650					2655			
Arg	Asp	Leu	Tyr	Gln	Ser	Asp	Phe	Ser	Glu	Pro	Ser	Asp	Gly	Tyr
2660						2665					2670			



Ser Ser Glu Ser Glu Asn Ser Ile Val Leu Ser Leu Asp Glu His  
 2675 2680 2685

Arg Ser Cys Arg Val Pro Arg His Val Arg Val Val Asn Ala Asp  
 2690 2695 2700

Val Val Thr Gly Arg Arg Tyr Val Arg Gly Thr Ala Leu Gly Ala  
 2705 2710 2715

Leu Ala Leu Leu Ser Gln Ala Cys Arg Arg Met Ile Asp Asn Val  
 2720 2725 2730

Arg Tyr Thr Arg Lys Leu Leu Met Asp His Thr Glu Asp Ile Phe  
 2735 2740 2745

Gln Gly Leu Gly Tyr Val Lys Leu Leu Leu Asp Gly Thr Tyr Ile  
 2750 2755 2760

<210> 20

<211> 585

<212> PRT

<213> Varicella zoster

<400> 20

Met Asp Arg Val Glu Ser Glu Glu Pro Met Asp Gly Phe Glu Ser Pro  
 1 5 10 15

Val Phe Ser Glu Asn Thr Ser Ser Asn Ser Gly Trp Cys Ser Asp Ala  
 20 25 30

Phe Ser Asp Ser Tyr Ile Ala Tyr Asn Pro Ala Leu Leu Leu Lys Asn  
 35 40 45

Asp Leu Leu Phe Ser Glu Leu Leu Phe Ala Ser His Leu Ile Asn Val  
 50 55 60

Pro Arg Ala Ile Glu Asn Asn Val Thr Tyr Glu Ala Ser Ser Ala Val  
 65 70 75 80

Gly Val Asp Asn Glu Met Thr Ser Ser Thr Thr Glu Phe Ile Glu Glu  
 85 90 95

Ile Gly Asp Val Leu Ala Leu Asp Arg Ala Cys Leu Val Cys Arg Thr  
 100 105 110

Leu Asp Leu Tyr Lys Arg Lys Phe Gly Leu Thr Pro Glu Trp Val Ala  
 184



115	120	125
Asp Tyr Ala Met Leu Cys Met Lys Ser Leu Ala Ser Pro Pro Cys Ala 130 135 140		
Val Val Thr Phe Ser Ala Ala Phe Glu Phe Val Tyr Leu Met Asp Arg 145 150 155 160		
Tyr Tyr Leu Cys Arg Tyr Asn Val Thr Leu Val Gly Ser Phe Ala Arg 165 170 175		
Arg Thr Leu Ser Leu Leu Asp Ile Gln Arg His Phe Phe Leu His Val 180 185 190		
Cys Phe Arg Thr Asp Gly Gly Leu Pro Gly Ile Arg Pro Pro Pro Gly 195 200 205		
Lys Glu Met Ala Asn Lys Val Arg Tyr Ser Asn Tyr Ser Phe Phe Val 210 215 220		
Gln Ala Val Val Arg Ala Ala Leu Leu Ser Ile Ser Thr Ser Arg Leu 225 230 235 240		
Asp Glu Thr Glu Thr Arg Lys Ser Phe Tyr Phe Asn Gln Asp Gly Leu 245 250 255		
Thr Gly Gly Pro Gln Pro Leu Ala Ala Ala Leu Ala Asn Trp Lys Asp 260 265 270		
Cys Ala Arg Met Val Asp Cys Ser Ser Ser Glu His Arg Thr Ser Gly 275 280 285		
Met Ile Thr Cys Ala Glu Arg Ala Leu Lys Glu Asp Ile Glu Phe Glu 290 295 300		
Asp Ile Leu Ile Asp Lys Leu Lys Lys Ser Ser Tyr Val Glu Ala Ala 305 310 315 320		
Trp Gly Tyr Ala Asp Leu Ala Leu Leu Leu Leu Ser Gly Val Ala Thr 325 330 335		
Trp Asn Val Asp Glu Arg Thr Asn Cys Ala Ile Glu Thr Arg Val Gly 340 345 350		
Cys Val Lys Ser Tyr Trp Gln Ala Asn Arg Ile Glu Asn Ser Arg Asp 185		



355

360

365

Val Pro Lys Gln Phe Ser Lys Phe Thr Ser Glu Asp Ala Cys Pro Glu  
 370 375 380

Val Ala Phe Gly Pro Ile Leu Leu Thr Thr Leu Lys Asn Ala Lys Cys  
 385 390 395 400

Arg Gly Arg Thr Asn Thr Glu Cys Met Leu Cys Cys Leu Leu Thr Ile  
 405 410 415

Gly His Tyr Trp Ile Ala Leu Arg Gln Phe Lys Arg Asp Ile Leu Ala  
 420 425 430

Tyr Ser Ala Asn Asn Thr Ser Leu Phe Asp Cys Ile Glu Pro Val Ile  
 435 440 445

Asn Ala Trp Ser Leu Asp Asn Pro Ile Lys Leu Lys Phe Pro Phe Asn  
 450 455 460

Asp Glu Gly Arg Phe Ile Thr Ile Val Lys Ala Ala Gly Ser Glu Ala  
 465 470 475 480

Val Tyr Lys His Leu Phe Cys Asp Leu Leu Cys Ala Leu Ser Glu Leu  
 485 490 495

Gln Thr Asn Pro Lys Ile Leu Phe Ala His Pro Thr Thr Ala Asp Lys  
 500 505 510

Glu Val Leu Glu Leu Tyr Lys Ala Gln Leu Ala Ala Gln Asn Arg Phe  
 515 520 525

Glu Gly Arg Val Cys Ala Gly Leu Trp Thr Leu Ala Tyr Ala Phe Lys  
 530 535 540

Ala Tyr Gln Ile Phe Pro Arg Lys Pro Thr Ala Asn Ala Ala Phe Ile  
 545 550 555 560

Arg Asp Gly Gly Leu Met Leu Arg Arg His Ala Ile Ser Leu Val Ser  
 565 570 575

Leu Glu His Thr Leu Ser Lys Tyr Val  
 580 585

&lt;210&gt; 21



<211> 1204  
<212> PRT  
<213> Varicella zoster

<400> 21

Met Glu Asn Thr Gln Lys Thr Val Thr Val Pro Thr Gly Pro Leu Gly  
1 5 10 15

Tyr Val Tyr Ala Cys Arg Val Glu Asp Leu Asp Leu Glu Glu Ile Ser  
20 25 30

Phe Leu Ala Ala Arg Ser Thr Asp Ser Asp Leu Ala Leu Leu Pro Leu  
35 40 45

Met Arg Asn Leu Thr Val Glu Lys Thr Phe Thr Ser Ser Leu Ala Val  
50 55 60

Val Ser Gly Ala Arg Thr Thr Gly Leu Ala Gly Ala Gly Ile Thr Leu  
65 70 75 80

Lys Leu Thr Thr Ser His Phe Tyr Pro Ser Val Phe Val Phe His Gly  
85 90 95

Gly Lys His Val Leu Pro Ser Ser Ala Ala Pro Asn Leu Thr Arg Ala  
100 105 110

Cys Asn Ala Ala Arg Glu Arg Phe Gly Phe Ser Arg Cys Gln Gly Pro  
115 120 125

Pro Val Asp Gly Ala Val Glu Thr Thr Gly Ala Glu Ile Cys Thr Arg  
130 135 140

Leu Gly Leu Glu Pro Glu Asn Thr Ile Leu Tyr Leu Val Val Thr Ala  
145 150 155 160

Leu Phe Lys Glu Ala Val Phe Met Cys Asn Val Phe Leu His Tyr Gly  
165 170 175

Gly Leu Asp Ile Val His Ile Asn His Gly Asp Val Ile Arg Ile Pro  
180 185 190

Leu Phe Pro Val Gln Leu Phe Met Pro Asp Val Asn Arg Leu Val Pro  
195 200 205

Asp Pro Phe Asn Thr His His Arg Ser Ile Gly Glu Gly Phe Val Tyr  
210 215 220



Pro Thr Pro Phe Tyr Asn Thr Gly Leu Cys His Leu Ile His Asp Cys  
 225 230 235 240  
 Val Ile Ala Pro Met Ala Val Ala Leu Arg Val Arg Asn Val Thr Ala  
 245 250 255  
 Val Ala Arg Gly Ala Ala His Leu Ala Phe Asp Glu Asn His Glu Gly  
 260 265 270  
 Ala Val Leu Pro Pro Asp Ile Thr Tyr Thr Tyr Phe Gln Ser Ser Ser  
 275 280 285  
 Ser Gly Thr Thr Thr Ala Arg Gly Ala Arg Arg Asn Asp Val Asn Ser  
 290 295 300  
 Thr Ser Lys Pro Ser Pro Ser Gly Gly Phe Glu Arg Arg Leu Ala Ser  
 305 310 315 320  
 Ile Met Ala Ala Asp Thr Ala Leu His Ala Glu Val Ile Phe Asn Thr  
 325 330 335  
 Gly Ile Tyr Glu Glu Thr Pro Thr Asp Ile Lys Glu Trp Pro Met Phe  
 340 345 350  
 Ile Gly Met Glu Gly Thr Leu Pro Arg Leu Asn Ala Leu Gly Ser Tyr  
 355 360 365  
 Thr Ala Arg Val Ala Gly Val Ile Gly Ala Met Val Phe Ser Pro Asn  
 370 375 380  
 Ser Ala Leu Tyr Leu Thr Glu Val Glu Asp Ser Gly Met Thr Glu Ala  
 385 390 395 400  
 Lys Asp Gly Gly Pro Gly Pro Ser Phe Asn Arg Phe Tyr Gln Phe Ala  
 405 410 415  
 Gly Pro His Leu Ala Ala Asn Pro Gln Thr Asp Arg Asp Gly His Val  
 420 425 430  
 Leu Ser Ser Gln Ser Thr Gly Ser Ser Asn Thr Glu Phe Ser Val Asp  
 435 440 445  
 Tyr Leu Ala Leu Ile Cys Gly Phe Gly Ala Pro Leu Leu Ala Arg Leu  
 450 455 460



Leu Phe Tyr Leu Glu Arg Cys Asp Ala Gly Ala Phe Thr Gly Gly His  
 465 470 475 480

Gly Asp Ala Leu Lys Tyr Val Thr Gly Thr Phe Asp Ser Glu Ile Pro  
 485 490 495

Cys Ser Leu Cys Glu Lys His Thr Arg Pro Val Cys Ala His Thr Thr  
 500 505 510

Val His Arg Leu Arg Gln Arg Met Pro Arg Phe Gly Gln Ala Thr Arg  
 515 520 525

Gln Pro Ile Gly Val Phe Gly Thr Met Asn Ser Gln Tyr Ser Asp Cys  
 530 535 540

Asp Pro Leu Gly Asn Tyr Ala Pro Tyr Leu Ile Leu Arg Lys Pro Gly  
 545 550 555 560

Asp Gln Thr Glu Ala Ala Lys Ala Thr Met Gln Asp Thr Tyr Arg Ala  
 565 570 575

Thr Leu Glu Arg Leu Phe Ile Asp Leu Glu Gln Glu Arg Leu Leu Asp  
 580 585 590

Arg Gly Ala Pro Cys Ser Ser Glu Gly Leu Ser Ser Val Ile Val Asp  
 595 600 605

His Pro Thr Phe Arg Arg Ile Leu Asp Thr Leu Arg Ala Arg Ile Glu  
 610 615 620

Gln Thr Thr Thr Gln Phe Met Lys Val Leu Val Glu Thr Arg Asp Tyr  
 625 630 635 640

Lys Ile Arg Glu Gly Leu Ser Glu Ala Thr His Ser Met Ala Leu Thr  
 645 650 655

Phe Asp Pro Tyr Ser Gly Ala Phe Cys Pro Ile Thr Asn Phe Leu Val  
 660 665 670

Lys Arg Thr His Leu Ala Val Val Gln Asp Leu Ala Leu Ser Gln Cys  
 675 680 685

His Cys Val Phe Tyr Gly Gln Gln Val Glu Gly Arg Asn Phe Arg Asn  
 690 695 700



Gln Phe Gln Pro Val Leu Arg Arg Arg Phe Val Asp Leu Phe Asn Gly  
705 710 715 720

Gly Phe Ile Ser Thr Arg Ser Ile Thr Val Thr Leu Ser Glu Gly Pro  
725 730 735

Val Ser Ala Pro Asn Pro Thr Leu Gly Gln Asp Ala Pro Ala Gly Arg  
740 745 750

Thr Phe Asp Gly Asp Leu Ala Arg Val Ser Val Glu Val Ile Arg Asp  
755 760 765

Ile Arg Val Lys Asn Arg Val Val Phe Ser Gly Asn Cys Thr Asn Leu  
770 775 780

Ser Glu Ala Ala Arg Ala Arg Leu Val Gly Leu Ala Ser Ala Tyr Gln  
785 790 795 800

Arg Gln Glu Lys Arg Val Asp Met Leu His Gly Ala Leu Gly Phe Leu  
805 810 815

Leu Lys Gln Phe His Gly Leu Leu Phe Pro Arg Gly Met Pro Pro Asn  
820 825 830

Ser Lys Ser Pro Asn Pro Gln Trp Phe Trp Thr Leu Leu Gln Arg Asn  
835 840 845

Gln Met Pro Ala Asp Lys Leu Thr His Glu Glu Ile Thr Thr Ile Ala  
850 855 860

Ala Val Lys Arg Phe Thr Glu Glu Tyr Ala Ala Ile Asn Phe Ile Asn  
865 870 875 880

Leu Pro Pro Thr Cys Ile Gly Glu Leu Ala Gln Phe Tyr Met Ala Asn  
885 890 895

Leu Ile Leu Lys Tyr Cys Asp His Ser Gln Tyr Leu Ile Asn Thr Leu  
900 905 910

Thr Ser Ile Ile Thr Gly Ala Arg Arg Pro Arg Asp Pro Ser Ser Val  
915 920 925

Leu His Trp Ile Arg Lys Asp Val Thr Ser Ala Ala Asp Ile Glu Thr  
930 935 940



Gln Ala Lys Ala Leu Leu Glu Lys Thr Glu Asn Leu Pro Glu Leu Trp  
 945 950 955 960

Thr Thr Ala Phe Thr Ser Thr His Leu Val Arg Ala Ala Met Asn Gln  
 965 970 975

Arg Pro Met Val Val Leu Gly Ile Ser Ile Ser Lys Tyr His Gly Ala  
 980 985 990

Ala Gly Asn Asn Arg Val Phe Gln Ala Gly Asn Trp Ser Gly Leu Asn  
 995 1000 1005

Gly Gly Lys Asn Val Cys Pro Leu Phe Thr Phe Asp Arg Thr Arg  
 1010 1015 1020

Arg Phe Ile Ile Ala Cys Pro Arg Gly Gly Phe Ile Cys Pro Val  
 1025 1030 1035

Thr Gly Pro Ser Ser Gly Asn Arg Glu Thr Thr Leu Ser Asp Gln  
 1040 1045 1050

Val Arg Gly Ile Ile Val Ser Gly Gly Ala Met Val Gln Leu Ala  
 1055 1060 1065

Ile Tyr Ala Thr Val Val Arg Ala Val Gly Ala Arg Ala Gln His  
 1070 1075 1080

Met Ala Phe Asp Asp Trp Leu Ser Leu Thr Asp Asp Glu Phe Leu  
 1085 1090 1095

Ala Arg Asp Leu Glu Glu Leu His Asp Gln Ile Ile Gln Thr Leu  
 1100 1105 1110

Glu Thr Pro Trp Thr Val Glu Gly Ala Leu Glu Ala Val Lys Ile  
 1115 1120 1125

Leu Asp Glu Lys Thr Thr Ala Gly Asp Gly Glu Thr Pro Thr Asn  
 1130 1135 1140

Leu Ala Phe Asn Phe Asp Ser Cys Glu Pro Ser His Asp Thr Thr  
 1145 1150 1155

Ser Asn Val Leu Asn Ile Ser Gly Ser Asn Ile Ser Gly Ser Thr  
 1160 1165 1170



Val Pro Gly Leu Lys Arg Pro Pro Glu Asp Asp Glu Leu Phe Asp  
 1175 1180 1185

Leu Ser Gly Ile Pro Ile Lys His Gly Asn Ile Thr Met Glu Met  
 1190 1195 1200

Ile

<210> 22  
 <211> 770  
 <212> PRT  
 <213> Varicella zoster

<400> 22

Met Glu Leu Asp Ile Asn Arg Thr Leu Leu Val Leu Leu Gly Gln Val  
 1 5 10 15

Tyr Thr Tyr Ile Phe Gln Val Glu Leu Leu Arg Arg Cys Asp Pro Arg  
 20 25 30

Val Ala Cys Arg Phe Leu Tyr Arg Leu Ala Ala Asn Cys Leu Thr Val  
 35 40 45

Arg Tyr Leu Leu Lys Leu Phe Leu Arg Gly Phe Asn Thr Gln Leu Lys  
 50 55 60

Phe Gly Asn Thr Pro Thr Val Cys Ala Leu His Trp Ala Leu Cys Tyr  
 65 70 75 80

Val Lys Gly Glu Gly Glu Arg Leu Phe Glu Leu Leu Gln His Phe Lys  
 85 90 95

Thr Arg Phe Val Tyr Gly Glu Thr Lys Asp Ser Asn Cys Ile Lys Asp  
 100 105 110

Tyr Phe Val Ser Ala Phe Asn Leu Lys Thr Cys Gln Tyr His His Glu  
 115 120 125

Leu Ser Leu Thr Thr Tyr Gly Gly Tyr Val Ser Ser Glu Ile Gln Phe  
 130 135 140

Leu His Asp Ile Glu Asn Phe Leu Lys Gln Leu Asn Tyr Cys Tyr Ile  
 145 150 155 160



Ile Thr Ser Ser Arg Glu Ala Leu Asn Thr Leu Glu Thr Val Thr Arg  
165 170 175

Phe Met Thr Asp Thr Ile Gly Ser Gly Leu Ile Pro Pro Val Glu Leu  
180 185 190

Phe Asp Pro Ala His Pro Cys Ala Ile Cys Phe Glu Glu Leu Cys Ile  
195 200 205

Thr Ala Asn Gln Gly Glu Thr Leu His Arg Arg Leu Leu Gly Cys Ile  
210 215 220

Cys Asp His Val Thr Lys Gln Val Arg Val Asn Val Asp Val Asp Asp  
225 230 235 240

Ile Ile Arg Cys Leu Pro Tyr Ile Pro Asp Val Pro Asp Ile Lys Arg  
245 250 255

Gln Ser Ala Val Glu Ala Leu Arg Thr Leu Gln Thr Lys Thr Val Val  
260 265 270

Asn Pro Met Gly Ala Lys Asn Asp Thr Phe Asp Gln Thr Tyr Glu Ile  
275 280 285

Ala Ser Thr Met Leu Asp Ser Tyr Asn Val Phe Lys Pro Ala Pro Arg  
290 295 300

Cys Met Tyr Ala Ile Ser Glu Leu Lys Phe Trp Leu Thr Ser Asn Ser  
305 310 315 320

Thr Glu Gly Pro Gln Arg Thr Leu Asp Val Phe Val Asp Asn Leu Asp  
325 330 335

Val Leu Asn Glu His Glu Lys His Ala Glu Leu Thr Ala Val Thr Val  
340 345 350

Glu Leu Ala Leu Phe Gly Lys Thr Pro Ile His Phe Asp Arg Ala Phe  
355 360 365

Ser Glu Glu Leu Gly Ser Leu Asp Ala Ile Asp Ser Ile Leu Val Gly  
370 375 380

Asn Arg Ser Ser Ser Pro Asp Ser Gln Ile Glu Ala Leu Ile Lys Ala  
385 390 395 400



Cys Tyr Ala His His Leu Ser Ser Pro Leu Met Arg His Ile Ser Asn  
 405 410 415  
 Pro Ser His Asp Asn Glu Ala Ala Leu Arg Gln Leu Leu Glu Arg Val  
 420 425 430  
 Gly Cys Glu Asp Asp Leu Thr Lys Glu Ala Ser Asp Ser Ala Thr Ala  
 435 440 445  
 Ser Glu Cys Asp Leu Asn Asp Asp Ser Ser Ile Thr Phe Ala Val His  
 450 455 460  
 Gly Trp Glu Asn Leu Leu Ser Lys Ala Lys Ile Asp Ala Ala Glu Arg  
 465 470 475 480  
 Lys Arg Val Tyr Leu Glu His Leu Ser Lys Arg Ser Leu Thr Ser Leu  
 485 490 495  
 Gly Arg Cys Ile Arg Glu Gln Arg Gln Glu Leu Glu Lys Thr Leu Arg  
 500 505 510  
 Val Asn Val Tyr Gly Glu Ala Leu Leu Gln Thr Phe Val Ser Met Gln  
 515 520 525  
 Asn Gly Phe Gly Ala Arg Asn Val Phe Leu Ala Lys Val Ser Gln Ala  
 530 535 540  
 Gly Cys Ile Ile Asp Asn Arg Ile Gln Glu Ala Ala Phe Asp Ala His  
 545 550 555 560  
 Arg Phe Ile Arg Asn Thr Leu Val Arg His Thr Val Asp Ala Ala Met  
 565 570 575  
 Leu Pro Ala Leu Thr His Lys Phe Phe Glu Leu Val Asn Gly Pro Leu  
 580 585 590  
 Phe Asn His Asp Glu His Arg Phe Ala Gln Pro Pro Asn Thr Ala Leu  
 595 600 605  
 Phe Phe Thr Val Glu Asn Val Gly Leu Phe Pro His Leu Lys Glu Glu  
 610 615 620  
 Leu Ala Lys Phe Met Gly Gly Val Val Gly Ser Asn Trp Leu Leu Ser  
 625 630 635 640



Pro Phe Arg Gly Phe Tyr Cys Phe Ser Gly Val Glu Gly Val Thr Phe  
645 650 655

Ala Gln Arg Leu Ala Trp Lys Tyr Ile Arg Glu Leu Val Phe Ala Thr  
660 665 670

Thr Leu Phe Thr Ser Val Phe His Cys Gly Glu Val Arg Leu Cys Arg  
675 680 685

Val Asp Arg Leu Gly Lys Asp Pro Arg Gly Cys Thr Ser Gln Pro Lys  
690 695 700

Gly Ile Gly Ser Ser His Gly Pro Leu Asp Gly Ile Tyr Leu Thr Tyr  
705 710 715 720

Glu Glu Thr Cys Pro Leu Val Ala Ile Ile Gln Ser Gly Glu Thr Gly  
725 730 735

Ile Asp Gln Asn Thr Val Val Ile Tyr Asp Ser Asp Val Phe Ser Leu  
740 745 750

Leu Tyr Thr Leu Met Gln Arg Leu Ala Pro Asp Ser Thr Asp Pro Ala  
755 760 765

Phe Ser  
770

<210> 23  
<211> 868  
<212> PRT  
<213> Varicella zoster

<400> 23

Met Phe Val Thr Ala Val Val Ser Val Ser Pro Ser Ser Phe Tyr Glu  
1 5 10 15

Ser Leu Gln Val Glu Pro Thr Gln Ser Glu Asp Ile Thr Arg Ser Ala  
20 25 30

His Leu Gly Asp Gly Asp Glu Ile Arg Glu Ala Ile His Lys Ser Gln  
35 40 45

Asp Ala Glu Thr Lys Pro Thr Phe Tyr Val Cys Pro Pro Pro Thr Gly  
50 55 60



Ser Thr Ile Val Arg Leu Glu Pro Thr Arg Thr Cys Pro Asp Tyr His  
 65 70 75 80

Leu Gly Lys Asn Phe Thr Glu Gly Ile Ala Val Val Tyr Lys Glu Asn  
 85 90 95

Ile Ala Ala Tyr Lys Phe Lys Ala Thr Val Tyr Tyr Lys Asp Val Ile  
 100 105 110

Val Ser Thr Ala Trp Ala Gly Ser Ser Tyr Thr Gln Ile Thr Asn Arg  
 115 120 125

Tyr Ala Asp Arg Val Pro Ile Pro Val Ser Glu Ile Thr Asp Thr Ile  
 130 135 140

Asp Lys Phe Gly Lys Cys Ser Ser Lys Ala Thr Tyr Val Arg Asn Asn  
 145 150 155 160

His Lys Val Glu Ala Phe Asn Glu Asp Lys Asn Pro Gln Asp Met Pro  
 165 170 175

Leu Ile Ala Ser Lys Tyr Asn Ser Val Gly Ser Lys Ala Trp His Thr  
 180 185 190

Thr Asn Asp Thr Tyr Met Val Ala Gly Thr Pro Gly Thr Tyr Arg Thr  
 195 200 205

Gly Thr Ser Val Asn Cys Ile Ile Glu Glu Val Glu Ala Arg Ser Ile  
 210 215 220

Phe Pro Tyr Asp Ser Phe Gly Leu Ser Thr Gly Asp Ile Ile Tyr Met  
 225 230 235 240

Ser Pro Phe Phe Gly Leu Arg Asp Gly Ala Tyr Arg Glu His Ser Asn  
 245 250 255

Tyr Ala Met Asp Arg Phe His Gln Phe Glu Gly Tyr Arg Gln Arg Asp  
 260 265 270

Leu Asp Thr Arg Ala Leu Leu Glu Pro Ala Ala Arg Asn Phe Leu Val  
 275 280 285

Thr Pro His Leu Thr Val Gly Trp Asn Trp Lys Pro Lys Arg Thr Glu  
 290 295 300



Val Cys Ser Leu Val Lys Trp Arg Glu Val Glu Asp Val Val Arg Asp  
 305 310 315 320  
 Glu Tyr Ala His Asn Phe Arg Phe Thr Met Lys Thr Leu Ser Thr Thr  
 325 330 335  
 Phe Ile Ser Glu Thr Asn Glu Phe Asn Leu Asn Gln Ile His Leu Ser  
 340 345 350  
 Gln Cys Val Lys Glu Glu Ala Arg Ala Ile Ile Asn Arg Ile Tyr Thr  
 355 360 365  
 Thr Arg Tyr Asn Ser Ser His Val Arg Thr Gly Asp Ile Gln Thr Tyr  
 370 375 380  
 Leu Ala Arg Gly Gly Phe Val Val Val Phe Gln Pro Leu Leu Ser Asn  
 385 390 395 400  
 Ser Leu Ala Arg Leu Tyr Leu Gln Glu Leu Val Arg Glu Asn Thr Asn  
 405 410 415  
 His Ser Pro Gln Lys His Pro Thr Arg Asn Thr Arg Ser Arg Arg Ser  
 420 425 430  
 Val Pro Val Glu Leu Arg Ala Asn Arg Thr Ile Thr Thr Thr Ser Ser  
 435 440 445  
 Val Glu Phe Ala Met Leu Gln Phe Thr Tyr Asp His Ile Gln Glu His  
 450 455 460  
 Val Asn Glu Met Leu Ala Arg Ile Ser Ser Ser Trp Cys Gln Leu Gln  
 465 470 475 480  
 Asn Arg Glu Arg Ala Leu Trp Ser Gly Leu Phe Pro Ile Asn Pro Ser  
 485 490 495  
 Ala Leu Ala Ser Thr Ile Leu Asp Gln Arg Val Lys Ala Arg Ile Leu  
 500 505 510  
 Gly Asp Val Ile Ser Val Ser Asn Cys Pro Glu Leu Gly Ser Asp Thr  
 515 520 525  
 Arg Ile Ile Leu Gln Asn Ser Met Arg Val Ser Gly Ser Thr Thr Arg  
 530 535 540



Cys Tyr Ser Arg Pro Leu Ile Ser Ile Val Ser Leu Asn Gly Ser Gly  
 545 550 555 560  
 Thr Val Glu Gly Gln Leu Gly Thr Asp Asn Glu Leu Ile Met Ser Arg  
 565 570 575  
 Asp Leu Leu Glu Pro Cys Val Ala Asn His Lys Arg Tyr Phe Leu Phe  
 580 585 590  
 Gly His His Tyr Val Tyr Tyr Glu Asp Tyr Arg Tyr Val Arg Glu Ile  
 595 600 605  
 Ala Val His Asp Val Gly Met Ile Ser Thr Tyr Val Asp Leu Asn Leu  
 610 615 620  
 Thr Leu Leu Lys Asp Arg Glu Phe Met Pro Leu Gln Val Tyr Thr Arg  
 625 630 635 640  
 Asp Glu Leu Arg Asp Thr Gly Leu Leu Asp Tyr Ser Glu Ile Gln Arg  
 645 650 655  
 Arg Asn Gln Met His Ser Leu Arg Phe Tyr Asp Ile Asp Lys Val Val  
 660 665 670  
 Gln Tyr Asp Ser Gly Thr Ala Ile Met Gln Gly Met Ala Gln Phe Phe  
 675 680 685  
 Gln Gly Leu Gly Thr Ala Gly Gln Ala Val Gly His Val Val Leu Gly  
 690 695 700  
 Ala Thr Gly Ala Leu Leu Ser Thr Val His Gly Phe Thr Thr Phe Leu  
 705 710 715 720  
 Ser Asn Pro Phe Gly Ala Leu Ala Val Gly Leu Leu Val Leu Ala Gly  
 725 730 735  
 Leu Val Ala Ala Phe Phe Ala Tyr Arg Tyr Val Leu Lys Leu Lys Thr  
 740 745 750  
 Ser Pro Met Lys Ala Leu Tyr Pro Leu Thr Thr Lys Gly Leu Lys Gln  
 755 760 765  
 Leu Pro Glu Gly Met Asp Pro Phe Ala Glu Lys Pro Asn Ala Thr Asp  
 770 775 780



Thr Pro Ile Glu Glu Ile Gly Asp Ser Gln Asn Thr Glu Pro Ser Val  
 785 790 795 800

Asn Ser Gly Phe Asp Pro Asp Lys Phe Arg Glu Ala Gln Glu Met Ile  
 805 810 815

Lys Tyr Met Thr Leu Val Ser Ala Ala Glu Arg Gln Glu Ser Lys Ala  
 820 825 830

Arg Lys Lys Asn Lys Thr Ser Ala Leu Leu Thr Ser Arg Leu Thr Gly  
 835 840 845

Leu Ala Leu Arg Asn Arg Arg Gly Tyr Ser Arg Val Arg Thr Glu Asn  
 850 855 860

Val Thr Gly Val  
 865

<210> 24  
 <211> 143  
 <212> PRT  
 <213> Varicella zoster

<400> 24

Met Glu Ser Ser Asn Ile Asn Ala Leu Gln Gln Pro Ser Ser Ile Ala  
 1 5 10 15

His His Pro Ser Lys Gln Cys Ala Ser Ser Leu Asn Glu Thr Val Lys  
 20 25 30

Asp Ser Pro Pro Ala Ile Tyr Glu Asp Arg Leu Glu His Thr Pro Val  
 35 40 45

Gln Leu Pro Arg Asp Gly Thr Pro Arg Asp Val Cys Ser Val Gly Gln  
 50 55 60

Leu Thr Cys Arg Ala Cys Ala Thr Lys Pro Phe Arg Leu Asn Arg Asp  
 65 70 75 80

Ser Gln Tyr Asp Tyr Leu Asn Thr Cys Pro Gly Gly Arg His Ile Ser  
 85 90 95

Leu Ala Leu Glu Ile Ile Thr Gly Arg Trp Val Cys Ile Pro Arg Val  
 100 105 110

Phe Pro Asp Thr Pro Glu Glu Lys Trp Met Ala Pro Tyr Ile Ile Pro  
 199



115

120

125

Asp Arg Glu Gln Pro Ser Ser Gly Asp Glu Asp Ser Asp Thr Asp  
 130 135 140

&lt;210&gt; 25

&lt;211&gt; 341

&lt;212&gt; PRT

&lt;213&gt; Varicella zoster

&lt;400&gt; 25

Met Ser Thr Asp Lys Thr Asp Val Lys Met Gly Val Leu Arg Ile Tyr  
 1 5 10 15

Leu Asp Gly Ala Tyr Gly Ile Gly Lys Thr Thr Ala Ala Glu Glu Phe  
 20 25 30

Leu His His Phe Ala Ile Thr Pro Asn Arg Ile Leu Leu Ile Gly Glu  
 35 40 45

Pro Leu Ser Tyr Trp Arg Asn Leu Ala Gly Glu Asp Ala Ile Cys Gly  
 50 55 60

Ile Tyr Gly Thr Gln Thr Arg Arg Leu Asn Gly Asp Val Ser Pro Glu  
 65 70 75 80

Asp Ala Gln Arg Leu Thr Ala His Phe Gln Ser Leu Phe Cys Ser Pro  
 85 90 95

His Ala Ile Met His Ala Lys Ile Ser Ala Leu Met Asp Thr Ser Thr  
 100 105 110

Ser Asp Leu Val Gln Val Asn Lys Glu Pro Tyr Lys Ile Met Leu Ser  
 115 120 125

Asp Arg His Pro Ile Ala Ser Thr Ile Cys Phe Pro Leu Ser Arg Tyr  
 130 135 140

Leu Val Gly Asp Met Ser Pro Ala Ala Leu Pro Gly Leu Leu Phe Thr  
 145 150 155 160

Leu Pro Ala Glu Pro Pro Gly Thr Asn Leu Val Val Cys Thr Val Ser  
 165 170 175

Leu Pro Ser His Leu Ser Arg Val Ser Lys Arg Ala Arg Pro Gly Glu  
 180 185 190

200



Thr Val Asn Leu Pro Phe Val Met Val Leu Arg Asn Val Tyr Ile Met  
195 200 205

Leu Ile Asn Thr Ile Ile Phe Leu Lys Thr Asn Asn Trp His Ala Gly  
210 215 220

Trp Asn Thr Leu Ser Phe Cys Asn Asp Val Phe Lys Gln Lys Leu Gln  
225 230 235 240

Lys Ser Glu Cys Ile Lys Leu Arg Glu Val Pro Gly Ile Glu Asp Thr  
245 250 255

Leu Phe Ala Val Leu Lys Leu Pro Glu Leu Cys Gly Glu Phe Gly Asn  
260 265 270

Ile Leu Pro Leu Trp Ala Trp Gly Met Glu Thr Leu Ser Asn Cys Ser  
275 280 285

Arg Ser Met Ser Pro Phe Val Leu Ser Leu Glu Gln Thr Pro Gln His  
290 295 300

Ala Ala Gln Glu Leu Lys Thr Leu Leu Pro Gln Met Thr Pro Ala Asn  
305 310 315 320

Met Ser Ser Gly Ala Trp Asn Ile Leu Lys Glu Leu Val Asn Ala Val  
325 330 335

Gln Asp Asn Thr Ser  
340

<210> 26  
<211> 841  
<212> PRT  
<213> Varicella zoster

<400> 26

Met Phe Ala Leu Val Leu Ala Val Val Ile Leu Pro Leu Trp Thr Thr  
1 5 10 15

Ala Asn Lys Ser Tyr Val Thr Pro Thr Pro Ala Thr Arg Ser Ile Gly  
20 25 30

His Met Ser Ala Leu Leu Arg Glu Tyr Ser Asp Arg Asn Met Ser Leu  
35 40 45



Lys Leu Glu Ala Phe Tyr Pro Thr Gly Phe Asp Glu Glu Leu Ile Lys  
50 55 60

Ser Leu His Trp Gly Asn Asp Arg Lys His Val Phe Leu Val Ile Val  
65 70 75 80

Lys Val Asn Pro Thr Thr His Glu Gly Asp Val Gly Leu Val Ile Phe  
85 90 95

Pro Lys Tyr Leu Leu Ser Pro Tyr His Phe Lys Ala Glu His Arg Ala  
100 105 110

Pro Phe Pro Ala Gly Arg Phe Gly Phe Leu Ser His Pro Val Thr Pro  
115 120 125

Asp Val Ser Phe Phe Asp Ser Ser Phe Ala Pro Tyr Leu Thr Thr Gln  
130 135 140

His Leu Val Ala Phe Thr Thr Phe Pro Pro Asn Pro Leu Val Trp His  
145 150 155 160

Leu Glu Arg Ala Glu Thr Ala Ala Thr Ala Glu Arg Pro Phe Gly Val  
165 170 175

Ser Leu Leu Pro Ala Arg Pro Thr Val Pro Lys Asn Thr Ile Leu Glu  
180 185 190

His Lys Ala His Phe Ala Thr Trp Asp Ala Leu Ala Arg His Thr Phe  
195 200 205

Phe Ser Ala Glu Ala Ile Ile Thr Asn Ser Thr Leu Arg Ile His Val  
210 215 220

Pro Leu Phe Gly Ser Val Trp Pro Ile Arg Tyr Trp Ala Thr Gly Ser  
225 230 235 240

Val Leu Leu Thr Ser Asp Ser Gly Arg Val Glu Val Asn Ile Gly Val  
245 250 255

Gly Phe Met Ser Ser Leu Ile Ser Leu Ser Ser Gly Pro Pro Ile Glu  
260 265 270

Leu Ile Val Val Pro His Thr Val Lys Leu Asn Ala Val Thr Ser Asp  
275 280 285



Thr Thr Trp Phe Gln Leu Asn Pro Pro Gly Pro Asp Pro Gly Pro Ser  
 290 295 300

Tyr Arg Val Tyr Leu Leu Gly Arg Gly Leu Asp Met Asn Phe Ser Lys  
 305 310 315 320

His Ala Thr Val Asp Ile Cys Ala Tyr Pro Glu Glu Ser Leu Asp Tyr  
 325 330 335

Arg Tyr His Leu Ser Met Ala His Thr Glu Ala Leu Arg Met Thr Thr  
 340 345 350

Lys Ala Asp Gln His Asp Ile Asn Glu Glu Ser Tyr Tyr His Ile Ala  
 355 360 365

Ala Arg Ile Ala Thr Ser Ile Phe Ala Leu Ser Glu Met Gly Arg Thr  
 370 375 380

Thr Glu Tyr Phe Leu Leu Asp Glu Ile Val Asp Val Gln Tyr Gln Leu  
 385 390 395 400

Lys Phe Leu Asn Tyr Ile Leu Met Arg Ile Gly Ala Gly Ala His Pro  
 405 410 415

Asn Thr Ile Ser Gly Thr Ser Asp Leu Ile Phe Ala Asp Pro Ser Gln  
 420 425 430

Leu His Asp Glu Leu Ser Leu Leu Phe Gly Gln Val Lys Pro Ala Asn  
 435 440 445

Val Asp Tyr Phe Ile Ser Tyr Asp Glu Ala Arg Asp Gln Leu Lys Thr  
 450 455 460

Ala Tyr Ala Leu Ser Arg Gly Gln Asp His Val Asn Ala Leu Ser Leu  
 465 470 475 480

Ala Arg Arg Val Ile Met Ser Ile Tyr Lys Gly Leu Leu Val Lys Gln  
 485 490 495

Asn Leu Asn Ala Thr Glu Arg Gln Ala Leu Phe Phe Ala Ser Met Ile  
 500 505 510

Leu Leu Asn Phe Arg Glu Gly Leu Glu Asn Ser Ser Arg Val Leu Asp  
 515 520 525



Gly Arg Thr Thr Leu Leu Leu Met Thr Ser Met Cys Thr Ala Ala His  
530 535 540

Ala Thr Gln Ala Ala Leu Asn Ile Gln Glu Gly Leu Ala Tyr Leu Asn  
545 550 555 560

Pro Ser Lys His Met Phe Thr Ile Pro Asn Val Tyr Ser Pro Cys Met  
565 570 575

Gly Ser Leu Arg Thr Asp Leu Thr Glu Glu Ile His Val Met Asn Leu  
580 585 590

Leu Ser Ala Ile Pro Thr Arg Pro Gly Leu Asn Glu Val Leu His Thr  
595 600 605

Gln Leu Asp Glu Ser Glu Ile Phe Asp Ala Ala Phe Lys Thr Met Met  
610 615 620

Ile Phe Thr Thr Trp Thr Ala Lys Asp Leu His Ile Leu His Thr His  
625 630 635 640

Val Pro Glu Val Phe Thr Cys Gln Asp Ala Ala Ala Arg Asn Gly Glu  
645 650 655

Tyr Val Leu Ile Leu Pro Ala Val Gln Gly His Ser Tyr Val Ile Thr  
660 665 670

Arg Asn Lys Pro Gln Arg Gly Leu Val Tyr Ser Leu Ala Asp Val Asp  
675 680 685

Val Tyr Asn Pro Ile Ser Val Val Tyr Leu Ser Arg Asp Thr Cys Val  
690 695 700

Ser Glu His Gly Val Ile Glu Thr Val Ala Leu Pro His Pro Asp Asn  
705 710 715 720

Leu Lys Glu Cys Leu Tyr Cys Gly Ser Val Phe Leu Arg Tyr Leu Thr  
725 730 735

Thr Gly Ala Ile Met Asp Ile Ile Ile Ile Asp Ser Lys Asp Thr Glu  
740 745 750

Arg Gln Leu Ala Ala Met Gly Asn Ser Thr Ile Pro Pro Phe Asn Pro  
755 760 765



Asp Met His Gly Asp Asp Ser Lys Ala Val Leu Leu Phe Pro Asn Gly  
770 775 780

Thr Val Val Thr Leu Leu Gly Phe Glu Arg Arg Gln Ala Ile Arg Met  
785 790 795 800

Ser Gly Gln Tyr Leu Gly Ala Ser Leu Gly Gly Ala Phe Leu Ala Val  
805 810 815

Val Gly Phe Gly Ile Ile Gly Trp Met Leu Cys Gly Asn Ser Arg Leu  
820 825 830

Arg Glu Tyr Asn Lys Ile Pro Leu Thr  
835 840

<210> 27  
<211> 240  
<212> PRT  
<213> Varicella zoster  
  
<400> 27

Met Asn Pro Pro Gln Ala Arg Val Ser Glu Gln Thr Lys Asp Leu Leu  
1 5 10 15

Ser Val Met Val Asn Gln His Pro Glu Glu Asp Ala Lys Val Cys Lys  
20 25 30

Ser Ser Asp Asn Ser Pro Leu Tyr Asn Thr Met Val Met Leu Ser Tyr  
35 40 45

Gly Gly Asp Thr Asp Leu Leu Leu Ser Ser Ala Cys Thr Arg Thr Ser  
50 55 60

Thr Val Asn Arg Ser Ala Phe Thr Gln His Ser Val Phe Tyr Ile Ile  
65 70 75 80

Ser Thr Val Leu Ile Gln Pro Ile Cys Cys Ile Phe Phe Phe Phe Tyr  
85 90 95

Tyr Lys Ala Thr Arg Cys Met Leu Leu Phe Thr Ala Gly Leu Leu Leu  
100 105 110

Thr Ile Leu His His Phe Arg Leu Ile Ile Met Leu Leu Cys Val Tyr  
115 120 125



Arg Asn Ile Arg Ser Asp Leu Leu Pro Leu Ser Thr Ser Gln Gln Leu  
130 135 140

Leu Leu Gly Ile Ile Val Val Thr Arg Thr Met Leu Phe Cys Ile Thr  
145 150 155 160

Ala Tyr Tyr Thr Leu Phe Ile Asp Thr Arg Val Phe Phe Leu Ile Thr  
165 170 175

Gly His Leu Gln Ser Glu Val Ile Phe Pro Asp Ser Val Ser Lys Ile  
180 185 190

Leu Pro Val Ser Trp Gly Pro Ser Pro Ala Val Leu Leu Val Met Ala  
195 200 205

Ala Val Ile Tyr Ala Met Asp Cys Leu Val Asp Thr Val Ser Phe Ile  
210 215 220

Gly Pro Arg Val Trp Val Arg Val Met Leu Lys Thr Ser Ile Ser Phe  
225 230 235 240

<210> 28  
<211> 1396  
<212> PRT  
<213> Varicella zoster

<400> 28

Met Thr Thr Val Ser Cys Pro Ala Asn Val Ile Thr Thr Thr Glu Ser  
1 5 10 15

Asp Arg Ile Ala Gly Leu Phe Asn Ile Pro Ala Gly Ile Ile Pro Thr  
20 25 30

Gly Asn Val Leu Ser Thr Ile Glu Val Cys Ala His Arg Cys Ile Phe  
35 40 45

Asp Phe Phe Lys Gln Ile Arg Ser Asp Asp Asn Ser Leu Tyr Ser Ala  
50 55 60

Gln Phe Asp Ile Leu Leu Gly Thr Tyr Cys Asn Thr Leu Asn Phe Val  
65 70 75 80

Arg Phe Leu Glu Leu Gly Leu Ser Val Ala Cys Ile Cys Thr Lys Phe  
85 90 95

Pro Glu Leu Ala Tyr Val Arg Asp Gly Val Ile Gln Phe Glu Val Gln  
206



100							105					110				
Gln	Pro	Met	Ile	Ala	Arg	Asp	Gly	Pro	His	Pro	Val	Asp	Gln	Pro	Val	
		115					120					125				
His	Asn	Tyr	Met	Val	Lys	Arg	Ile	His	Lys	Arg	Ser	Leu	Ser	Ala	Ala	
		130				135					140					
Phe	Ala	Ile	Ala	Ser	Glu	Ala	Leu	Ser	Leu	Leu	Ser	Asn	Thr	Tyr	Val	
145					150					155						
Asp	Gly	Thr	Glu	Ile	Asp	Ser	Ser	Leu	Arg	Ile	Arg	Ala	Ile	Gln	Gln	
				165					170					175		
Met	Ala	Arg	Asn	Leu	Arg	Thr	Val	Leu	Asp	Ser	Phe	Glu	Arg	Gly	Thr	
			180					185					190			
Ala	Asp	Gln	Leu	Leu	Gly	Val	Leu	Leu	Glu	Lys	Ala	Pro	Pro	Leu	Ser	
		195					200					205				
Leu	Leu	Ser	Pro	Ile	Asn	Lys	Phe	Gln	Pro	Glu	Gly	His	Leu	Asn	Arg	
		210				215					220					
Val	Ala	Arg	Ala	Ala	Leu	Leu	Ser	Asp	Leu	Lys	Arg	Arg	Val	Cys	Ala	
225					230					235					240	
Asp	Met	Phe	Phe	Met	Thr	Arg	His	Ala	Arg	Glu	Pro	Arg	Leu	Ile	Ser	
				245					250					255		
Ala	Tyr	Leu	Ser	Asp	Met	Val	Ser	Cys	Thr	Gln	Pro	Ser	Val	Met	Val	
			260					265					270			
Ser	Arg	Ile	Thr	His	Thr	Asn	Thr	Arg	Gly	Arg	Gln	Val	Asp	Gly	Val	
		275					280					285				
Leu	Val	Thr	Thr	Ala	Thr	Leu	Lys	Arg	Gln	Leu	Leu	Gln	Gly	Ile	Leu	
		290				295					300					
Gln	Ile	Asp	Asp	Thr	Ala	Ala	Asp	Val	Pro	Val	Thr	Tyr	Gly	Glu	Met	
305					310					315					320	
Val	Leu	Gln	Gly	Thr	Asn	Leu	Val	Thr	Ala	Leu	Val	Met	Gly	Lys	Ala	
				325					330					335		
Val	Arg	Gly	Met	Asp	Asp	Val	Ala	Arg	His	Leu	Leu	Asp	Ile	Thr	Asp	
207																



340

345

350

Pro Asn Thr Leu Asn Ile Pro Ser Ile Pro Pro Gln Ser Asn Ser Asp  
 355 360 365

Ser Thr Thr Ala Gly Leu Pro Val Asn Ala Arg Val Pro Ala Asp Leu  
 370 375 380

Val Ile Val Gly Asp Lys Leu Val Phe Leu Glu Ala Leu Glu Arg Arg  
 385 390 395 400

Val Tyr Gln Ala Thr Arg Val Ala Tyr Pro Leu Ile Gly Asn Ile Asp  
 405 410 415

Ile Thr Phe Ile Met Pro Met Gly Val Phe Gln Ala Asn Ser Met Asp  
 420 425 430

Arg Tyr Thr Arg His Ala Gly Asp Phe Ser Thr Val Ser Glu Gln Asp  
 435 440 445

Pro Arg Gln Phe Pro Pro Gln Gly Ile Phe Phe Tyr Asn Lys Asp Gly  
 450 455 460

Ile Leu Thr Gln Leu Thr Leu Arg Asp Ala Met Gly Thr Ile Cys His  
 465 470 475 480

Ser Ser Leu Leu Asp Val Glu Ala Thr Leu Val Ala Leu Arg Gln Gln  
 485 490 495

His Leu Asp Arg Gln Cys Tyr Phe Gly Val Tyr Val Ala Glu Gly Thr  
 500 505 510

Glu Asp Thr Leu Asp Val Gln Met Gly Arg Phe Met Glu Thr Trp Ala  
 515 520 525

Asp Met Met Pro His His Pro His Trp Val Asn Glu His Leu Thr Ile  
 530 535 540

Leu Gln Phe Ile Ala Pro Ser Asn Pro Arg Leu Arg Phe Glu Leu Asn  
 545 550 555 560

Pro Ala Phe Asp Phe Phe Val Ala Pro Gly Asp Val Asp Leu Pro Gly  
 565 570 575

Pro Gln Arg Pro Pro Glu Ala Met Pro Thr Val Asn Ala Thr Leu Arg  
 208



580

585

590

Ile Ile Asn Gly Asn Ile Pro Val Pro Leu Cys Pro Ile Ser Phe Arg  
 595 600 605

Asp Cys Arg Gly Thr Gln Leu Gly Leu Gly Arg His Thr Met Thr Pro  
 610 615 620

Ala Thr Ile Lys Ala Val Lys Asp Thr Phe Glu Asp Arg Ala Tyr Pro  
 625 630 635 640

Thr Ile Phe Tyr Met Leu Glu Ala Val Ile His Gly Asn Glu Arg Asn  
 645 650 655

Phe Cys Ala Leu Leu Arg Leu Leu Thr Gln Cys Ile Arg Gly Tyr Trp  
 660 665 670

Glu Gln Ser His Arg Val Ala Phe Val Asn Asn Phe His Met Leu Met  
 675 680 685

Tyr Ile Thr Thr Tyr Leu Gly Asn Gly Glu Leu Pro Glu Val Cys Ile  
 690 695 700

Asn Ile Tyr Arg Asp Leu Leu Gln His Val Arg Ala Leu Arg Gln Thr  
 705 710 715 720

Ile Thr Asp Phe Thr Ile Gln Gly Glu Gly His Asn Gly Glu Thr Ser  
 725 730 735

Glu Ala Leu Asn Asn Ile Leu Thr Asp Asp Thr Phe Ile Ala Pro Ile  
 740 745 750

Leu Trp Asp Cys Asp Ala Leu Ile Tyr Arg Asp Glu Ala Ala Arg Asp  
 755 760 765

Arg Leu Pro Ala Ile Arg Val Ser Gly Arg Asn Gly Tyr Gln Ala Leu  
 770 775 780

His Phe Val Asp Met Ala Gly His Asn Phe Gln Arg Arg Asp Asn Val  
 785 790 795 800

Leu Ile His Gly Arg Pro Val Arg Gly Asp Thr Gly Gln Gly Ile Pro  
 805 810 815

Ile Thr Pro His His Asp Arg Glu Trp Gly Ile Leu Ser Lys Ile Tyr  
 209



820					825					830					
Tyr	Tyr	Ile	Val	Ile	Pro	Ala	Phe	Ser	Arg	Gly	Ser	Cys	Cys	Thr	Met
		835					840					845			
Gly	Val	Arg	Tyr	Asp	Arg	Leu	Tyr	Pro	Ala	Leu	Gln	Ala	Val	Ile	Val
	850					855					860				
Pro	Glu	Ile	Pro	Ala	Asp	Glu	Glu	Ala	Pro	Thr	Thr	Pro	Glu	Asp	Pro
865					870					875					880
Arg	His	Pro	Leu	His	Ala	His	Gln	Leu	Val	Pro	Asn	Ser	Leu	Asn	Val
				885					890					895	
Tyr	Phe	His	Asn	Ala	His	Leu	Thr	Val	Asp	Gly	Asp	Ala	Leu	Leu	Thr
			900					905					910		
Leu	Gln	Glu	Leu	Met	Gly	Asp	Met	Ala	Glu	Arg	Thr	Thr	Ala	Ile	Leu
		915					920						925		
Val	Ser	Ser	Ala	Pro	Asp	Ala	Gly	Ala	Ala	Thr	Ala	Thr	Thr	Arg	Asn
	930					935					940				
Met	Arg	Ile	Tyr	Asp	Gly	Ala	Leu	Tyr	His	Gly	Leu	Ile	Met	Met	Ala
945					950					955					960
Tyr	Gln	Ala	Tyr	Asp	Glu	Thr	Ile	Ala	Thr	Gly	Thr	Phe	Phe	Tyr	Pro
				965					970					975	
Val	Pro	Val	Asn	Pro	Leu	Phe	Ala	Cys	Pro	Glu	His	Leu	Ala	Ser	Leu
			980					985					990		
Arg	Gly	Met	Thr	Asn	Ala	Arg	Arg	Val	Leu	Ala	Lys	Met	Val	Pro	Pro
		995					1000					1005			
Ile	Pro	Pro	Phe	Leu	Gly	Ala	Asn	His	His	Ala	Thr	Ile	Arg	Gln	
	1010					1015					1020				
Pro	Val	Ala	Tyr	His	Val	Thr	His	Ser	Lys	Ser	Asp	Phe	Asn	Thr	
	1025					1030					1035				
Leu	Thr	Tyr	Ser	Leu	Leu	Gly	Gly	Tyr	Phe	Lys	Phe	Thr	Pro	Ile	
	1040					1045					1050				
Ser	Leu	Thr	His	Gln	Leu	Arg	Thr	Gly	Phe	His	Pro	Gly	Ile	Ala	



1055	1060	1065
Phe Thr Val Val Arg Gln Asp 1070	Arg Phe Ala Thr 1075	Glu Gln Leu Leu 1080
Tyr Ala Glu Arg Ala Ser 1085	Glu Ser Tyr Phe Val 1090	Gly Gln Ile Gln 1095
Val His His His Asp Ala 1100	Ile Gly Gly Val Asn 1105	Phe Thr Leu Thr 1110
Gln Pro Arg Ala His Val 1115	Asp Leu Gly Val Gly 1120	Tyr Thr Ala Val 1125
Cys Ala Thr Ala Ala Leu 1130	Arg Cys Pro Leu Thr 1135	Asp Met Gly Asn 1140
Thr Ala Gln Asn Leu Phe 1145	Phe Ser Arg Gly Gly 1150	Val Pro Met Leu 1155
His Asp Asn Val Thr Glu 1160	Ser Leu Arg Arg Ile 1165	Thr Ala Ser Gly 1170
Gly Arg Leu Asn Pro Thr 1175	Glu Pro Leu Pro Ile 1180	Phe Gly Gly Leu 1185
Arg Pro Ala Thr Ser Ala 1190	Gly Ile Ala Arg Gly 1195	Gln Ala Ser Val 1200
Cys Glu Phe Val Ala Met 1205	Pro Val Ser Thr Asp 1210	Leu Gln Tyr Phe 1215
Arg Thr Ala Cys Asn Pro 1220	Arg Gly Arg Ala Ser 1225	Gly Met Leu Tyr 1230
Met Gly Asp Arg Asp Ala 1235	Asp Ile Glu Ala Ile 1240	Met Phe Asp His 1245
Thr Gln Ser Asp Val Ala 1250	Tyr Thr Asp Arg Ala 1255	Thr Leu Asn Pro 1260
Trp Ala Ser Gln Lys His 1265	Ser Tyr Gly Asp Arg 1270	Leu Tyr Asn Gly 1275
Thr Tyr Asn Leu Thr Gly 1280	Ala Ser Pro Ile Tyr 1285	Ser Pro Cys Phe 1290



1280

1285

1290

Lys Phe Phe Thr Pro Ala Glu Val Asn Thr Asn Cys Asn Thr Leu  
 1295 1300 1305

Asp Arg Leu Leu Met Glu Ala Lys Ala Val Ala Ser Gln Ser Ser  
 1310 1315 1320

Thr Asp Thr Glu Tyr Gln Phe Lys Arg Pro Pro Gly Ser Thr Glu  
 1325 1330 1335

Met Thr Gln Asp Pro Cys Gly Leu Phe Gln Glu Ala Tyr Pro Pro  
 1340 1345 1350

Leu Cys Ser Ser Asp Ala Ala Met Leu Arg Thr Ala His Ala Gly  
 1355 1360 1365

Glu Thr Gly Ala Asp Glu Val His Leu Ala Gln Tyr Leu Ile Arg  
 1370 1375 1380

Asp Ala Ser Pro Leu Arg Gly Cys Leu Pro Leu Pro Arg  
 1385 1390 1395

&lt;210&gt; 29

&lt;211&gt; 316

&lt;212&gt; PRT

&lt;213&gt; Varicella zoster

&lt;400&gt; 29

Met Ala Met Pro Phe Glu Ile Glu Val Leu Leu Pro Gly Glu Leu Ser  
 1 5 10 15

Pro Ala Glu Thr Ser Ala Leu Gln Lys Cys Glu Gly Lys Ile Ile Thr  
 20 25 30

Phe Ser Thr Leu Arg His Arg Ala Ser Leu Val Asp Ile Ala Leu Ser  
 35 40 45

Ser Tyr Tyr Ile Asn Gly Ala Pro Pro Asp Thr Leu Ser Leu Leu Glu  
 50 55 60

Ala Tyr Arg Met Arg Phe Ala Ala Val Ile Thr Arg Val Ile Pro Gly  
 65 70 75 80

Lys Leu Leu Ala His Ala Ile Gly Val Gly Thr Pro Thr Pro Gly Leu  
 85 90 95



Phe Ile Gln Asn Thr Ser Pro Val Asp Leu Cys Asn Gly Asp Tyr Ile  
100 105 110

Cys Leu Leu Pro Pro Val Phe Gly Ser Ala Asp Ser Ile Arg Leu Asp  
115 120 125

Ser Val Gly Leu Glu Ile Val Phe Pro Leu Thr Ile Pro Gln Thr Leu  
130 135 140

Met Arg Glu Ile Ile Ala Lys Val Val Ala Arg Ala Val Glu Arg Thr  
145 150 155 160

Ala Ala Gly Ala Gln Ile Leu Pro His Glu Val Leu Arg Gly Ala Asp  
165 170 175

Val Ile Cys Tyr Asn Gly Arg Arg Tyr Glu Leu Glu Thr Asn Leu Gln  
180 185 190

His Arg Asp Gly Ser Asp Ala Ala Ile Arg Thr Leu Val Leu Asn Leu  
195 200 205

Met Phe Ser Ile Asn Glu Gly Cys Leu Leu Leu Leu Ala Leu Ile Pro  
210 215 220

Thr Leu Leu Val Gln Gly Ala His Asp Gly Tyr Val Asn Leu Leu Ile  
225 230 235 240

Gln Thr Ala Asn Cys Val Arg Glu Thr Gly Gln Leu Ile Asn Ile Pro  
245 250 255

Pro Met Pro Arg Ile Gln Asp Gly His Arg Arg Phe Pro Ile Tyr Glu  
260 265 270

Thr Ile Ser Ser Trp Ile Ser Thr Ser Ser Arg Leu Gly Asp Thr Leu  
275 280 285

Gly Thr Arg Ala Ile Leu Arg Val Cys Val Phe Asp Gly Pro Ser Thr  
290 295 300

Val His Pro Gly Asp Arg Thr Ala Val Ile Gln Val  
305 310 315

<210> 30  
<211> 676



<212> PRT  
<213> Varicella zoster

<400> 30

Met Glu Ala His Leu Ala Asn Glu Thr Lys His Ala Leu Trp His Asn  
1 5 10 15

Asp His Thr Lys Gly Leu Leu His Val Val Ile Pro Asn Ala Gly Leu  
20 25 30

Ile Ala Ala Gly Ile Asp Pro Ala Leu Leu Ile Leu Lys Lys Pro Gly  
35 40 45

Gln Arg Phe Lys Val Glu Val Gln Thr Arg Tyr His Ala Thr Gly Gln  
50 55 60

Cys Glu Pro Trp Cys Gln Val Phe Ala Ala Tyr Ile Pro Asp Asn Ala  
65 70 75 80

Leu Thr Asn Leu Leu Ile Pro Lys Thr Glu Pro Phe Val Ser His Val  
85 90 95

Phe Ser Ala Thr His Asn Ser Gly Gly Leu Ile Leu Ser Leu Pro Val  
100 105 110

Tyr Leu Ser Pro Gly Leu Phe Phe Asp Ala Phe Asn Val Val Ala Ile  
115 120 125

Arg Ile Asn Thr Gly Asn Arg Lys His Arg Asp Ile Cys Ile Met Tyr  
130 135 140

Ala Glu Leu Ile Pro Asn Gly Thr Arg Tyr Phe Ala Asp Gly Gln Arg  
145 150 155 160

Val Leu Leu Leu Cys Lys Gln Leu Ile Ala Tyr Ile Arg Cys Thr Pro  
165 170 175

Arg Leu Ala Ser Ser Ile Lys Ile Tyr Ala Glu His Met Val Ala Ala  
180 185 190

Met Gly Glu Ser His Thr Ser Asn Gly Asp Asn Ile Gly Pro Val Ser  
195 200 205

Ser Ile Ile Asp Leu Asp Arg Gln Leu Thr Ser Gly Gly Ile Asp Asp  
210 215 220



Ser Pro Ala Glu Thr Arg Ile Gln Glu Asn Asn Arg Asp Val Leu Glu  
 225 230 235 240  
 Leu Ile Lys Arg Ala Val Asn Ile Val Asn Ser Arg His Pro Val Arg  
 245 250 255  
 Pro Ser Ser Ser Arg Val Ala Ser Gly Leu Leu Gln Ser Ala Lys Gly  
 260 265 270  
 His Gly Ala Gln Thr Ser Asn Thr Asp Pro Ile Asn Asn Gly Ser Phe  
 275 280 285  
 Asp Gly Val Leu Glu Pro Pro Gly Gln Gly Arg Phe Thr Gly Lys Lys  
 290 295 300  
 Asn Asn Ser Ser Ala Ser Ile Pro Pro Leu Gln Asp Val Leu Leu Phe  
 305 310 315 320  
 Thr Pro Ala Ser Thr Glu Pro Gln Ser Leu Met Glu Trp Phe Asp Ile  
 325 330 335  
 Cys Tyr Ala Gln Leu Val Ser Gly Asp Thr Pro Ala Asp Phe Trp Lys  
 340 345 350  
 Arg Arg Pro Leu Ser Ile Val Pro Arg His Tyr Ala Glu Ser Pro Ser  
 355 360 365  
 Pro Leu Ile Val Val Ser Tyr Asn Gly Ser Ser Ala Trp Gly Gly Arg  
 370 375 380  
 Ile Thr Gly Ser Pro Ile Leu Tyr His Ser Ala Gln Ala Ile Ile Asp  
 385 390 395 400  
 Ala Ala Cys Ile Asn Ala Arg Val Asp Asn Pro Gln Ser Leu His Val  
 405 410 415  
 Thr Ala Arg Gln Glu Leu Val Ala Arg Leu Pro Phe Leu Ala Asn Val  
 420 425 430  
 Leu Asn Asn Gln Thr Pro Leu Pro Ala Phe Lys Pro Gly Ala Glu Met  
 435 440 445  
 Phe Leu Asn Gln Val Phe Lys Gln Ala Cys Val Thr Ser Leu Thr Gln  
 450 455 460



Gly Leu Ile Thr Glu Leu Gln Thr Asn Pro Thr Leu Gln Gln Leu Met  
 465 470 475 480

Glu Tyr Asp Ile Ala Asp Ser Ser Gln Thr Val Ile Asp Glu Ile Val  
 485 490 495

Ala Arg Thr Pro Asp Leu Ile Gln Thr Ile Val Ser Val Leu Thr Glu  
 500 505 510

Met Ser Met Asp Ala Phe Tyr Asn Ser Ser Leu Met Tyr Ala Val Leu  
 515 520 525

Ala Tyr Leu Ser Ser Val Tyr Thr Arg Pro Gln Gly Gly Gly Tyr Ile  
 530 535 540

Pro Tyr Leu His Ala Ser Phe Pro Cys Trp Leu Gly Asn Arg Ser Ile  
 545 550 555 560

Tyr Leu Phe Asp Tyr Tyr Asn Ser Gly Gly Glu Ile Leu Lys Leu Ser  
 565 570 575

Lys Val Pro Val Pro Val Ala Leu Glu Lys Val Gly Ile Gly Asn Ser  
 580 585 590

Thr Gln Leu Arg Gly Lys Phe Ile Arg Ser Ala Asp Ile Val Asp Ile  
 595 600 605

Gly Ile Cys Ser Lys Tyr Leu Pro Gly Gln Cys Tyr Ala Tyr Ile Cys  
 610 615 620

Leu Gly Phe Asn Gln Gln Leu Gln Ser Ile Leu Val Leu Pro Gly Gly  
 625 630 635 640

Phe Ala Ala Cys Phe Cys Ile Thr Asp Thr Leu Gln Ala Ala Leu Pro  
 645 650 655

Ala Ser Leu Ile Gly Pro Ile Leu Asp Arg Phe Cys Phe Ser Ile Pro  
 660 665 670

Asn Pro His Lys  
 675

<210> 31  
 <211> 363  
 <212> PRT



<213> Varicella zoster

<400> 31

Met Glu Leu Gln Arg Ile Phe Pro Leu Tyr Thr Ala Thr Gly Ala Ala  
1 5 10 15

Arg Lys Leu Thr Pro Glu Ala Val Gln Arg Leu Cys Asp Ala Leu Thr  
20 25 30

Leu Asp Met Gly Leu Trp Lys Ser Ile Leu Thr Asp Pro Arg Val Lys  
35 40 45

Ile Met Arg Ser Thr Ala Phe Ile Thr Leu Arg Ile Ala Pro Phe Ile  
50 55 60

Pro Leu Gln Thr Asp Thr Thr Asn Ile Ala Val Val Val Ala Thr Ile  
65 70 75 80

Tyr Ile Thr Arg Pro Arg Gln Met Asn Leu Pro Pro Lys Thr Phe His  
85 90 95

Val Ile Val Asn Phe Asn Tyr Glu Val Ser Tyr Ala Met Thr Ala Thr  
100 105 110

Leu Arg Ile Tyr Pro Val Glu Asn Ile Asp His Val Phe Gly Ala Thr  
115 120 125

Phe Lys Asn Pro Ile Ala Tyr Pro Leu Pro Thr Ser Ile Pro Asp Pro  
130 135 140

Arg Ala Asp Pro Thr Pro Ala Asp Leu Thr Pro Thr Pro Asn Leu Ser  
145 150 155 160

Asn Tyr Leu Gln Pro Pro Arg Leu Pro Lys Asn Pro Tyr Ala Cys Lys  
165 170 175

Val Ile Ser Pro Gly Val Trp Trp Ser Asp Glu Arg Arg Arg Leu Tyr  
180 185 190

Val Leu Ala Met Glu Pro Asn Leu Ile Gly Leu Cys Pro Ala Gly Trp  
195 200 205

His Ala Arg Ile Leu Gly Ser Val Leu Asn Arg Leu Leu Ser His Ala  
210 215 220



Asp Gly Cys Asp Glu Cys Asn His Arg Val His Val Gly Ala Leu Tyr  
225 230 235 240

Ala Leu Pro His Val Thr Asn His Ala Glu Gly Cys Val Cys Trp Ala  
245 250 255

Pro Cys Met Trp Arg Lys Ala Gly Gln Arg Glu Leu Lys Val Glu Val  
260 265 270

Asp Ile Gly Ala Thr Gln Val Leu Phe Val Asp Val Thr Thr Cys Ile  
275 280 285

Arg Ile Thr Ser Thr Lys Asn Pro Arg Ile Thr Ala Asn Leu Gly Asp  
290 295 300

Val Ile Ala Gly Thr Asn Ala Ser Gly Leu Ser Val Pro Val Asn Ser  
305 310 315 320

Ser Gly Trp Gln Leu Tyr Met Phe Gly Glu Thr Leu Ser Arg Ala Ile  
325 330 335

Ile Asn Gly Cys Gly Leu Leu Gln Arg Ile Cys Phe Pro Glu Thr Gln  
340 345 350

Arg Leu Ser Gly Glu Pro Glu Pro Thr Thr Thr  
355 360

<210> 32  
<211> 199  
<212> PRT  
<213> Varicella zoster

<400> 32

Met Ser Gly His Thr Pro Thr Tyr Ala Ser His Arg Arg Asn Arg Val  
1 5 10 15

Lys Leu Val Glu Ala His Asn Arg Ala Gly Leu Phe Lys Glu Arg Thr  
20 25 30

Leu Asp Leu Ile Arg Gly Gly Ala Ser Val Gln Asp Pro Ala Phe Val  
35 40 45

Tyr Ala Phe Thr Ala Ala Lys Glu Ala Cys Ala Asp Leu Asn Asn Gln  
50 55 60

Leu Arg Ser Ala Ala Arg Ile Ala Ser Val Glu Gln Lys Ile Arg Asp  
218



65		70		75		80									
Ile	Gln	Ser	Lys	Val	Glu	Glu	Gln	Thr	Ser	Ile	Gln	Gln	Ile	Leu	Asn
			85						90					95	
Thr	Asn	Arg	Arg	Tyr	Ile	Ala	Pro	Asp	Phe	Ile	Arg	Gly	Leu	Asp	Lys
			100					105					110		
Thr	Glu	Asp	Asp	Asn	Thr	Asp	Asn	Ile	Asp	Arg	Leu	Glu	Asp	Ala	Val
		115					120					125			
Gly	Pro	Asn	Ile	Glu	His	Glu	Asn	His	Thr	Trp	Phe	Gly	Glu	Asp	Asp
	130					135					140				
Glu	Ala	Leu	Leu	Thr	Gln	Trp	Met	Leu	Thr	Thr	His	Pro	Pro	Thr	Ser
145					150					155					160
Lys	Tyr	Leu	Gln	Leu	Gln	Asp	Leu	Cys	Val	Pro	Thr	Thr	Ile	Pro	Thr
			165						170					175	
Asp	Met	Asn	Gln	Met	Gln	Pro	Gln	Pro	Ile	Ser	Lys	Asn	Glu	Asn	Pro
			180					185					190		
Pro	Thr	Pro	His	Thr	Asp	Val									
		195													
<210>	33														
<211>	551														
<212>	PRT														
<213>	Varicella zoster														
<400>	33														
Met	Ala	Arg	Ser	Gly	Leu	Asp	Arg	Ile	Asp	Ile	Ser	Pro	Gln	Pro	Ala
1				5					10					15	
Lys	Lys	Ile	Ala	Arg	Val	Gly	Gly	Leu	Gln	His	Pro	Phe	Val	Lys	Thr
			20					25					30		
Asp	Ile	Asn	Thr	Ile	Asn	Val	Glu	His	His	Phe	Ile	Asp	Thr	Leu	Gln
		35					40					45			
Lys	Thr	Ser	Pro	Asn	Met	Asp	Cys	Arg	Gly	Met	Thr	Ala	Gly	Ile	Phe
	50					55					60				
Ile	Arg	Leu	Ser	His	Met	Tyr	Lys	Ile	Leu	Thr	Thr	Leu	Glu	Ser	Pro
65					70					75					80



Asn Asp Val Thr Tyr Thr Thr Pro Gly Ser Thr Asn Ala Leu Phe Phe  
85 90 95

Lys Thr Ser Thr Gln Pro Gln Glu Pro Arg Pro Glu Glu Leu Ala Ser  
100 105 110

Lys Leu Thr Gln Asp Asp Ile Lys Arg Ile Leu Leu Thr Ile Glu Ser  
115 120 125

Glu Thr Arg Gly Gln Gly Asp Asn Ala Ile Trp Thr Leu Leu Arg Arg  
130 135 140

Asn Leu Ile Thr Ala Ser Thr Leu Lys Trp Ser Val Ser Gly Pro Val  
145 150 155 160

Ile Pro Pro Gln Trp Phe Tyr His His Asn Thr Thr Asp Thr Tyr Gly  
165 170 175

Asp Ala Ala Ala Met Ala Phe Gly Lys Thr Asn Glu Pro Ala Ala Arg  
180 185 190

Ala Ile Val Glu Ala Leu Phe Ile Asp Pro Ala Asp Ile Arg Thr Pro  
195 200 205

Asp His Leu Thr Pro Glu Ala Thr Thr Lys Phe Phe Asn Phe Asp Met  
210 215 220

Leu Asn Thr Lys Ser Pro Ser Leu Leu Val Gly Thr Pro Arg Ile Gly  
225 230 235 240

Thr Tyr Glu Cys Gly Leu Leu Ile Asp Val Arg Thr Gly Leu Ile Gly  
245 250 255

Ala Ser Leu Asp Val Leu Val Cys Asp Arg Asp Pro Leu Thr Gly Thr  
260 265 270

Leu Asn Pro His Pro Ala Glu Thr Asp Ile Ser Phe Phe Glu Ile Lys  
275 280 285

Cys Arg Ala Lys Tyr Leu Phe Asp Pro Asp Asp Lys Asn Asn Pro Leu  
290 295 300

Gly Arg Thr Tyr Thr Thr Leu Ile Asn Arg Pro Thr Met Ala Asn Leu  
305 310 315 320



Arg Asp Phe Leu Tyr Thr Ile Lys Asn Pro Cys Val Ser Phe Phe Gly  
 325 330 335

Pro Ser Ala Asn Pro Ser Thr Arg Glu Ala Leu Ile Thr Asp His Val  
 340 345 350

Glu Trp Lys Arg Leu Gly Phe Lys Gly Gly Arg Ala Leu Thr Glu Leu  
 355 360 365

Asp Ala His His Leu Gly Leu Asn Arg Thr Ile Ser Ser Arg Val Trp  
 370 375 380

Val Phe Asn Asp Pro Asp Ile Gln Lys Gly Thr Ile Thr Thr Ile Ala  
 385 390 395 400

Trp Ala Thr Gly Asp Thr Ala Leu Gln Ile Pro Val Phe Ala Asn Pro  
 405 410 415

Arg His Ala Asn Phe Lys Gln Ile Ala Val Gln Thr Tyr Val Leu Ser  
 420 425 430

Gly Tyr Phe Pro Ala Leu Lys Leu Arg Pro Phe Leu Val Thr Phe Ile  
 435 440 445

Gly Arg Val Arg Arg Pro His Glu Val Gly Val Pro Leu Arg Val Asp  
 450 455 460

Thr Gln Ala Ala Ala Ile Tyr Glu Tyr Asn Trp Pro Thr Ile Pro Pro  
 465 470 475 480

His Cys Ala Val Pro Val Ile Ala Val Leu Thr Pro Ile Glu Val Asp  
 485 490 495

Val Pro Arg Val Thr Gln Ile Leu Lys Asp Thr Gly Asn Asn Ala Ile  
 500 505 510

Thr Ser Ala Leu Arg Ser Leu Arg Trp Asp Asn Leu His Pro Ala Val  
 515 520 525

Glu Glu Glu Ser Val Asp Cys Ala Asn Gly Thr Thr Ser Leu Leu Arg  
 530 535 540

Ala Thr Glu Lys Pro Leu Leu  
 545 550



<210> 34  
 <211> 835  
 <212> PRT  
 <213> Varicella zoster

<400> 34

Met Ser Pro Asn Thr Gly Glu Ser Asn Ala Ala Val Tyr Ala Ser Ser  
 1 5 10 15

Thr Gln Leu Ala Arg Ala Leu Tyr Gly Gly Asp Leu Val Ser Trp Ile  
 20 25 30

Lys His Thr His Pro Gly Ile Ser Leu Glu Leu Gln Leu Asp Val Pro  
 35 40 45

Val Lys Leu Ile Lys Pro Gly Met Ser Gln Thr Arg Pro Val Thr Val  
 50 55 60

Val Arg Ala Pro Met Gly Ser Gly Lys Thr Thr Ala Leu Leu Glu Trp  
 65 70 75 80

Leu Gln His Ala Leu Lys Ala Asp Ile Ser Val Leu Val Val Ser Cys  
 85 90 95

Arg Arg Ser Phe Thr Gln Thr Leu Ile Gln Arg Phe Asn Asp Ala Gly  
 100 105 110

Leu Ser Gly Phe Val Thr Tyr Leu Thr Ser Glu Thr Tyr Ile Met Gly  
 115 120 125

Phe Lys Arg Leu Ile Val Gln Leu Glu Ser Leu His Arg Val Ser Ser  
 130 135 140

Glu Ala Ile Asp Ser Tyr Asp Val Leu Ile Leu Asp Glu Val Met Ser  
 145 150 155 160

Val Ile Gly Gln Leu Tyr Ser Pro Thr Met Arg Arg Leu Ser Ala Val  
 165 170 175

Asp Ser Leu Leu Tyr Arg Leu Leu Asn Arg Cys Ser Gln Ile Ile Ala  
 180 185 190

Met Asp Ala Thr Val Asn Ser Gln Phe Ile Asp Leu Ile Ser Gly Leu  
 195 200 205



Arg Gly Asp Glu Asn Ile His Thr Ile Val Cys Thr Tyr Ala Gly Val  
 210 215 220  
 Gly Phe Ser Gly Arg Thr Cys Thr Ile Leu Arg Asp Met Gly Ile Asp  
 225 230 235 240  
 Thr Leu Val Arg Val Ile Lys Arg Ser Pro Glu His Glu Asp Val Arg  
 245 250 255  
 Thr Ile His Gln Leu Arg Gly Thr Phe Phe Asp Glu Leu Ala Leu Arg  
 260 265 270  
 Leu Gln Cys Gly His Asn Ile Cys Ile Phe Ser Ser Thr Leu Ser Phe  
 275 280 285  
 Ser Glu Leu Val Ala Gln Phe Cys Ala Ile Phe Thr Asp Ser Ile Leu  
 290 295 300  
 Ile Leu Asn Ser Thr Arg Pro Leu Cys Asn Val Asn Glu Trp Lys His  
 305 310 315 320  
 Phe Arg Val Leu Val Tyr Thr Thr Val Val Thr Val Gly Leu Ser Phe  
 325 330 335  
 Asp Met Ala His Phe His Ser Met Phe Ala Tyr Ile Lys Pro Met Ser  
 340 345 350  
 Tyr Gly Pro Asp Met Val Ser Val Tyr Gln Ser Leu Gly Arg Val Arg  
 355 360 365  
 Leu Leu Leu Leu Asn Glu Val Leu Met Tyr Val Asp Gly Ser Arg Thr  
 370 375 380  
 Arg Cys Gly Pro Leu Phe Ser Pro Met Leu Leu Asn Phe Thr Ile Ala  
 385 390 395 400  
 Asn Lys Phe Gln Trp Phe Pro Thr His Thr Gln Ile Thr Asn Lys Leu  
 405 410 415  
 Cys Cys Ala Phe Arg Gln Arg Cys Ala Asn Ala Phe Thr Arg Ser Asn  
 420 425 430  
 Thr His Leu Phe Ser Arg Phe Lys Tyr Lys His Leu Phe Glu Arg Cys  
 435 440 445



Ser Leu Trp Ser Leu Ala Asp Ser Ile Asn Ile Leu Gln Thr Leu Leu  
450 455 460

Ala Ser Asn Gln Ile Leu Val Val Leu Asp Gly Met Gly Pro Ile Thr  
465 470 475 480

Asp Val Ser Pro Val Gln Phe Cys Ala Phe Ile His Asp Leu Arg His  
485 490 495

Ser Ala Asn Ala Val Ala Ser Cys Met Arg Ser Leu Arg Gln Asp Asn  
500 505 510

Asp Ser Cys Leu Thr Asp Phe Gly Pro Ser Gly Phe Met Ala Asp Asn  
515 520 525

Ile Thr Ala Phe Met Glu Lys Tyr Leu Met Glu Ser Ile Asn Thr Glu  
530 535 540

Glu Gln Ile Lys Val Phe Lys Ala Leu Ala Cys Pro Ile Glu Gln Pro  
545 550 555 560

Arg Leu Val Asn Thr Ala Ile Leu Gly Ala Cys Ile Arg Ile Pro Glu  
565 570 575

Ala Leu Glu Ala Phe Asp Val Phe Gln Lys Ile Tyr Thr His Tyr Ala  
580 585 590

Ser Gly Trp Phe Pro Val Leu Asp Lys Thr Gly Glu Phe Ser Ile Ala  
595 600 605

Thr Ile Thr Thr Ala Pro Asn Leu Thr Thr His Trp Glu Leu Phe Arg  
610 615 620

Arg Cys Ala Tyr Ile Ala Lys Thr Leu Lys Trp Asn Pro Ser Thr Glu  
625 630 635 640

Gly Cys Val Thr Gln Val Leu Asp Thr Asp Ile Asn Thr Leu Phe Asn  
645 650 655

Gln His Gly Asp Ser Leu Ala Gln Leu Ile Phe Glu Val Met Arg Cys  
660 665 670

Asn Val Thr Asp Ala Lys Ile Ile Leu Asn Arg Pro Val Trp Arg Thr  
675 680 685



Thr Gly Phe Leu Asp Gly Cys His Asn Gln Cys Phe Arg Pro Ile Pro  
690 695 700

Thr Lys His Glu Tyr Asn Ile Ala Leu Phe Arg Leu Ile Trp Glu Gln  
705 710 715 720

Leu Phe Gly Ala Arg Val Thr Lys Ser Thr Gln Thr Phe Pro Gly Ser  
725 730 735

Thr Arg Val Lys Asn Leu Lys Lys Lys Asp Leu Glu Thr Leu Leu Asp  
740 745 750

Ser Ile Asn Val Asp Arg Ser Ala Cys Arg Thr Tyr Arg Gln Leu Tyr  
755 760 765

Asn Leu Leu Met Ser Gln Arg His Ser Phe Ser Gln Gln Arg Tyr Lys  
770 775 780

Ile Thr Ala Pro Ala Trp Ala Arg His Val Tyr Phe Gln Ala His Gln  
785 790 795 800

Met His Leu Ala Pro His Ala Glu Ala Met Leu Gln Leu Ala Leu Ser  
805 810 815

Glu Leu Ser Pro Gly Ser Trp Pro Arg Ile Asn Gly Ala Val Asn Phe  
820 825 830

Glu Ser Leu  
835

<210> 35  
<211> 771  
<212> PRT  
<213> Varicella zoster

<400> 35

Met Asp Ala Thr Gln Ile Thr Leu Val Arg Glu Ser Gly His Ile Cys  
1 5 10 15

Ala Ala Ser Ile Tyr Thr Ser Trp Thr Gln Ser Gly Gln Leu Thr Gln  
20 25 30

Asn Gly Leu Ser Val Leu Tyr Tyr Leu Leu Cys Lys Asn Ser Cys Gly  
35 40 45



Lys Tyr Val Pro Lys Phe Ala Glu Ile Thr Val Gln Gln Glu Asp Leu  
 50 55 60

Cys Arg Tyr Ser Arg His Gly Gly Ser Val Ser Ala Ala Thr Phe Ala  
 65 70 75 80

Ser Ile Cys Arg Ala Ala Ser Ser Ala Ala Leu Asp Ala Trp Pro Leu  
 85 90 95

Glu Pro Leu Gly Asn Ala Asp Thr Trp Arg Cys Leu His Gly Thr Ala  
 100 105 110

Leu Ala Thr Leu Arg Arg Val Leu Gly Phe Lys Ser Phe Tyr Ser Pro  
 115 120 125

Val Thr Phe Glu Thr Asp Thr Asn Thr Gly Leu Leu Leu Lys Thr Ile  
 130 135 140

Pro Asp Glu His Ala Leu Asn Asn Asp Asn Thr Pro Ser Thr Gly Val  
 145 150 155 160

Leu Arg Ala Asn Phe Pro Val Ala Ile Asp Val Ser Ala Val Ser Ala  
 165 170 175

Cys Asn Ala His Thr Gln Gly Thr Ser Leu Ala Tyr Ala Arg Leu Thr  
 180 185 190

Ala Leu Lys Ser Asn Gly Asp Thr Gln Gln Gln Thr Pro Leu Asp Val  
 195 200 205

Glu Val Ile Thr Pro Lys Ala Tyr Ile Arg Arg Lys Tyr Lys Ser Thr  
 210 215 220

Phe Ser Pro Pro Ile Glu Arg Glu Gly Gln Thr Ser Asp Leu Phe Asn  
 225 230 235 240

Leu Glu Glu Arg Arg Leu Val Leu Ser Gly Asn Arg Ala Ile Val Val  
 245 250 255

Arg Val Leu Leu Pro Cys Tyr Phe Asp Cys Leu Thr Thr Asp Ser Thr  
 260 265 270

Val Thr Ser Ser Leu Ser Ile Leu Ala Thr Tyr Arg Leu Trp Tyr Ala  
 275 280 285



Ala Ala Phe Gly Lys Pro Gly Val Val Arg Pro Ile Phe Ala Tyr Leu  
 290 295 300

Gly Pro Glu Leu Asn Pro Lys Gly Glu Asp Arg Asp Tyr Phe Cys Thr  
 305 310 315 320

Val Gly Phe Pro Gly Trp Thr Thr Leu Arg Thr Gln Thr Pro Ala Val  
 325 330 335

Glu Ser Ile Arg Thr Ala Thr Glu Met Tyr Met Glu Thr Asp Gly Leu  
 340 345 350

Trp Pro Val Thr Gly Ile Gln Ala Phe His Tyr Leu Ala Pro Trp Gly  
 355 360 365

Gln His Pro Pro Leu Pro Pro Arg Val Gln Asp Leu Ile Gly Gln Ile  
 370 375 380

Pro Gln Asp Thr Gly His Ala Asp Ala Thr Val Asn Trp Asp Ala Gly  
 385 390 395 400

Arg Ile Ser Thr Val Phe Lys Gln Pro Val Gln Leu Gln Asp Arg Trp  
 405 410 415

Met Ala Lys Phe Asp Phe Ser Ala Phe Phe Pro Thr Ile Tyr Cys Ala  
 420 425 430

Met Phe Pro Met His Phe Arg Leu Gly Lys Ile Val Leu Ala Arg Met  
 435 440 445

Arg Arg Gly Met Gly Cys Leu Lys Pro Ala Leu Val Ser Phe Phe Gly  
 450 455 460

Gly Leu Arg His Ile Leu Pro Ser Ile Tyr Lys Ala Ile Ile Phe Ile  
 465 470 475 480

Ala Asn Glu Ile Ser Leu Cys Val Glu Gln Thr Ala Leu Glu Gln Gly  
 485 490 495

Phe Ala Ile Cys Thr Tyr Ile Lys Asp Gly Phe Trp Gly Ile Phe Thr  
 500 505 510

Asp Leu His Thr Arg Asn Val Cys Ser Asp Gln Ala Arg Cys Ser Ala  
 515 520 525



Leu Asn Leu Ala Ala Thr Cys Glu Arg Ala Val Thr Gly Leu Leu Arg  
 530 535 540

Ile Gln Leu Gly Leu Asn Phe Thr Pro Ala Met Glu Pro Val Leu Arg  
 545 550 555 560

Val Glu Gly Val Tyr Thr His Ala Phe Thr Trp Cys Thr Thr Gly Ser  
 565 570 575

Trp Leu Trp Asn Leu Gln Thr Asn Thr Pro Pro Asp Leu Val Gly Val  
 580 585 590

Pro Trp Arg Ser Gln Ala Ala Arg Asp Leu Lys Glu Arg Leu Ser Gly  
 595 600 605

Leu Leu Cys Thr Ala Thr Lys Ile Arg Glu Arg Ile Gln Glu Asn Cys  
 610 615 620

Ile Trp Asp His Val Leu Tyr Asp Ile Trp Ala Gly Gln Val Val Glu  
 625 630 635 640

Ala Ala Arg Lys Thr Tyr Val Asp Phe Phe Glu His Val Phe Asp Arg  
 645 650 655

Arg Tyr Thr Pro Val Tyr Trp Ser Leu Gln Glu Gln Asn Ser Glu Thr  
 660 665 670

Lys Ala Ile Pro Ala Ser Tyr Leu Thr Tyr Gly His Met Gln Asp Lys  
 675 680 685

Asp Tyr Lys Pro Arg Gln Ile Ile Met Val Arg Asn Pro Asn Pro His  
 690 695 700

Gly Pro Pro Thr Val Val Tyr Trp Glu Leu Leu Pro Ser Cys Ala Cys  
 705 710 715 720

Ile Pro Pro Ile Asp Cys Ala Ala His Leu Lys Pro Leu Ile His Thr  
 725 730 735

Phe Val Thr Ile Ile Asn His Leu Leu Asp Ala His Asn Asp Phe Ser  
 740 745 750

Ser Pro Ser Leu Lys Phe Thr Asp Asp Pro Leu Ala Ser Tyr Asn Phe  
 755 760 765



Leu Phe Leu  
770

<210> 36  
<211> 881  
<212> PRT  
<213> Varicella zoster

<400> 36

Met Lys Arg Ser Ile Ser Val Asp Ser Ser Ser Pro Lys Asn Val Phe  
1 5 10 15

Asn Pro Glu Thr Pro Asn Gly Phe Asp Asp Ser Val Tyr Leu Asn Phe  
20 25 30

Thr Ser Met His Ser Ile Gln Pro Ile Leu Ser Arg Ile Arg Glu Leu  
35 40 45

Ala Ala Ile Thr Ile Pro Lys Glu Arg Val Pro Arg Leu Cys Trp Phe  
50 55 60

Lys Gln Leu Leu Glu Leu Gln Ala Pro Pro Glu Met Gln Arg Asn Glu  
65 70 75 80

Leu Pro Phe Ser Val Tyr Leu Ile Ser Gly Asn Ala Gly Ser Gly Lys  
85 90 95

Ser Thr Cys Ile Gln Thr Leu Asn Glu Ala Ile Asp Cys Ile Ile Thr  
100 105 110

Gly Ser Thr Arg Val Ala Ala Gln Asn Val His Ala Lys Leu Ser Thr  
115 120 125

Ala Tyr Ala Ser Arg Pro Ile Asn Thr Ile Phe His Glu Phe Gly Phe  
130 135 140

Arg Gly Asn His Ile Gln Ala Gln Leu Gly Arg Tyr Ala Tyr Asn Trp  
145 150 155 160

Thr Thr Thr Pro Pro Ser Ile Glu Asp Leu Gln Lys Arg Asp Ile Val  
165 170 175

Tyr Tyr Trp Glu Val Leu Ile Asp Ile Thr Lys Arg Val Phe Gln Met  
180 185 190

Gly Asp Asp Gly Arg Gly Gly Thr Ser Thr Phe Lys Thr Leu Trp Ala  
229



195

200

205

Ile Glu Arg Leu Leu Asn Lys Pro Thr Gly Ser Met Ser Gly Thr Ala  
 210 215 220

Phe Ile Ala Cys Gly Ser Leu Pro Ala Phe Thr Arg Ser Asn Val Ile  
 225 230 235 240

Val Ile Asp Glu Ala Gly Leu Leu Gly Arg His Ile Leu Thr Ala Val  
 245 250 255

Val Tyr Cys Trp Trp Leu Leu Asn Ala Ile Tyr Gln Ser Pro Gln Tyr  
 260 265 270

Ile Asn Gly Arg Lys Pro Val Ile Val Cys Val Gly Ser Pro Thr Gln  
 275 280 285

Thr Asp Ser Leu Glu Ser His Phe Gln His Asp Met Gln Arg Ser His  
 290 295 300

Val Thr Pro Ser Glu Asn Ile Leu Thr Tyr Ile Ile Cys Asn Gln Thr  
 305 310 315 320

Leu Arg Gln Tyr Thr Asn Ile Ser His Asn Trp Ala Ile Phe Ile Asn  
 325 330 335

Asn Lys Arg Cys Gln Glu Asp Asp Phe Gly Asn Leu Leu Lys Thr Leu  
 340 345 350

Glu Tyr Gly Leu Pro Ile Thr Glu Ala His Ala Arg Leu Val Asp Thr  
 355 360 365

Phe Val Val Pro Ala Ser Tyr Ile Asn Asn Pro Ala Asn Leu Pro Gly  
 370 375 380

Trp Thr Arg Leu Tyr Ser Ser His Lys Glu Val Ser Ala Tyr Met Ser  
 385 390 395 400

Lys Leu His Ala His Leu Lys Leu Ser Lys Asn Asp His Phe Ser Val  
 405 410 415

Phe Ala Leu Pro Thr Tyr Thr Phe Ile Arg Leu Thr Ala Phe Asp Glu  
 420 425 430

Tyr Arg Lys Leu Thr Gly Gln Pro Gly Leu Ser Val Glu His Trp Ile  
 230



435

440

445

Arg Ala Asn Ser Gly Arg Leu His Asn Tyr Ser Gln Ser Arg Asp His  
 450 455 460

Asp Met Gly Thr Val Lys Tyr Glu Thr His Ser Asn Arg Asp Leu Ile  
 465 470 475 480

Val Ala Arg Thr Asp Ile Thr Tyr Val Leu Asn Ser Leu Val Val Val  
 485 490 495

Thr Thr Arg Leu Arg Lys Leu Val Ile Gly Phe Ser Gly Thr Phe Gln  
 500 505 510

Ser Phe Ala Lys Val Leu Arg Asp Asp Ser Phe Val Lys Ala Arg Gly  
 515 520 525

Glu Thr Ser Ile Glu Tyr Ala Tyr Arg Phe Leu Ser Asn Leu Ile Phe  
 530 535 540

Gly Gly Leu Ile Asn Phe Tyr Asn Phe Leu Leu Asn Lys Asn Leu His  
 545 550 555 560

Pro Asp Lys Val Ser Leu Ala Tyr Lys Arg Leu Ala Ala Leu Thr Leu  
 565 570 575

Glu Leu Leu Ser Gly Thr Asn Lys Ala Pro Leu His Glu Ala Ala Val  
 580 585 590

Asn Gly Ala Gly Ala Gly Ile Asp Cys Asp Gly Ala Ala Thr Ser Ala  
 595 600 605

Asp Lys Ala Phe Cys Phe Thr Lys Ala Pro Glu Ser Lys Val Thr Ala  
 610 615 620

Ser Ile Pro Glu Asp Pro Asp Asp Val Ile Phe Thr Ala Leu Asn Asp  
 625 630 635 640

Glu Val Ile Asp Leu Val Tyr Cys Gln Tyr Glu Phe Ser Tyr Pro Lys  
 645 650 655

Ser Ser Asn Glu Val His Ala Gln Phe Leu Leu Met Lys Ala Ile Tyr  
 660 665 670

Asp Gly Arg Tyr Ala Ile Leu Ala Glu Leu Phe Glu Ser Ser Phe Thr  
 231



675

680

685

Thr Ala Pro Phe Ser Ala Tyr Val Asp Asn Val Asn Phe Asn Gly Ser  
 690 695 700

Glu Leu Leu Ile Gly Asn Val Arg Gly Gly Leu Leu Ser Leu Ala Leu  
 705 710 715 720

Gln Thr Asp Thr Tyr Thr Leu Leu Gly Tyr Thr Phe Ala Pro Val Pro  
 725 730 735

Val Phe Val Glu Glu Leu Thr Arg Lys Lys Leu Tyr Arg Glu Thr Thr  
 740 745 750

Glu Met Leu Tyr Ala Leu His Val Pro Leu Met Val Leu Gln Asp Gln  
 755 760 765

His Gly Phe Val Ser Ile Val Asn Ala Asn Val Cys Glu Phe Thr Glu  
 770 775 780

Ser Ile Glu Asp Ala Glu Leu Ala Met Ala Thr Thr Val Asp Tyr Gly  
 785 790 795 800

Leu Ser Ser Lys Leu Ala Met Thr Ile Ala Arg Ser Gln Gly Leu Ser  
 805 810 815

Leu Glu Lys Val Ala Ile Cys Phe Thr Ala Asp Lys Leu Arg Leu Asn  
 820 825 830

Ser Val Tyr Val Ala Met Ser Arg Thr Val Ser Ser Arg Phe Leu Lys  
 835 840 845

Met Asn Leu Asn Pro Leu Arg Glu Arg Tyr Glu Lys Ser Ala Glu Ile  
 850 855 860

Ser Asp His Ile Leu Ala Ala Leu Arg Asp Pro Asn Val His Val Val  
 865 870 875 880

Tyr

<210> 37

<211> 278

<212> PRT

<213> Varicella zoster



<400> 37

Met Phe Cys Thr Ser Pro Ala Thr Arg Gly Asp Ser Ser Glu Ser Lys  
1 5 10 15

Pro Gly Ala Ser Val Asp Val Asn Gly Lys Met Glu Tyr Gly Ser Ala  
20 25 30

Pro Gly Pro Leu Asn Gly Arg Asp Thr Ser Arg Gly Pro Gly Ala Phe  
35 40 45

Cys Thr Pro Gly Trp Glu Ile His Pro Ala Arg Leu Val Glu Asp Ile  
50 55 60

Asn Arg Val Phe Leu Cys Ile Ala Gln Ser Ser Gly Arg Val Thr Arg  
65 70 75 80

Asp Ser Arg Arg Leu Arg Arg Ile Cys Leu Asp Phe Tyr Leu Met Gly  
85 90 95

Arg Thr Arg Gln Arg Pro Thr Leu Ala Cys Trp Glu Glu Leu Leu Gln  
100 105 110

Leu Gln Pro Thr Gln Thr Gln Cys Leu Arg Ala Thr Leu Met Glu Val  
115 120 125

Ser His Arg Pro Pro Arg Gly Glu Asp Gly Phe Ile Glu Ala Pro Asn  
130 135 140

Val Pro Leu His Arg Ser Ala Leu Glu Cys Asp Val Ser Asp Asp Gly  
145 150 155 160

Gly Glu Asp Asp Ser Asp Asp Asp Gly Ser Thr Pro Ser Asp Val Ile  
165 170 175

Glu Phe Arg Asp Ser Asp Ala Glu Ser Ser Asp Gly Glu Asp Phe Ile  
180 185 190

Val Glu Glu Glu Ser Glu Glu Ser Thr Asp Ser Cys Glu Pro Asp Gly  
195 200 205

Val Pro Gly Asp Cys Tyr Arg Asp Gly Asp Gly Cys Asn Thr Pro Ser  
210 215 220

Pro Lys Arg Pro Gln Arg Ala Ile Glu Arg Tyr Ala Gly Ala Glu Thr  
225 230 235 240  
233



Ala Glu Tyr Thr Ala Ala Lys Ala Leu Thr Ala Leu Gly Glu Gly Gly  
245 250 255

Val Asp Trp Lys Arg Arg Arg His Glu Ala Pro Arg Arg His Asp Ile  
260 265 270

Pro Pro Pro His Gly Val  
275

<210> 38  
<211> 180  
<212> PRT  
<213> Varicella zoster

<400> 38

Met Asn Leu Cys Gly Ser Arg Gly Glu His Pro Gly Gly Glu Tyr Ala  
1 5 10 15

Gly Leu Tyr Cys Thr Arg His Asp Thr Pro Ala His Gln Ala Leu Met  
20 25 30

Asn Asp Ala Glu Arg Tyr Phe Ala Ala Ala Leu Cys Ala Ile Ser Thr  
35 40 45

Glu Ala Tyr Glu Ala Phe Ile His Ser Pro Ser Glu Arg Pro Cys Ala  
50 55 60

Ser Leu Trp Gly Arg Ala Lys Asp Ala Phe Gly Arg Met Cys Gly Glu  
65 70 75 80

Leu Ala Ala Asp Arg Gln Arg Pro Pro Ser Val Pro Pro Ile Arg Arg  
85 90 95

Ala Val Leu Ser Leu Leu Arg Glu Gln Cys Met Pro Asp Pro Gln Ser  
100 105 110

His Leu Glu Leu Ser Glu Arg Leu Ile Leu Met Ala Tyr Trp Cys Cys  
115 120 125

Leu Gly His Ala Gly Leu Pro Thr Ile Gly Leu Ser Pro Asp Asn Lys  
130 135 140

Cys Ile Arg Ala Glu Leu Tyr Asp Arg Pro Gly Gly Ile Cys His Arg  
145 150 155 160



Leu Phe Asp Ala Tyr Leu Gly Cys Gly Ser Leu Gly Val Pro Arg Thr  
165 170 175

Tyr Glu Arg Ser  
180

<210> 39  
<211> 393  
<212> PRT  
<213> Varicella zoster

<400> 39

Met Asn Asp Val Asp Ala Thr Asp Thr Phe Val Gly Gln Gly Lys Phe  
1 5 10 15

Arg Gly Ala Ile Ser Thr Ser Pro Ser His Ile Met Gln Thr Cys Gly  
20 25 30

Phe Ile Gln Gln Met Phe Pro Val Glu Met Ser Pro Gly Ile Glu Ser  
35 40 45

Glu Asp Asp Pro Asn Tyr Asp Val Asn Met Asp Ile Gln Ser Phe Asn  
50 55 60

Ile Phe Asp Gly Val His Glu Thr Glu Ala Glu Ala Ser Val Ala Leu  
65 70 75 80

Cys Ala Glu Ala Arg Val Gly Ile Asn Lys Ala Gly Phe Val Ile Leu  
85 90 95

Lys Thr Phe Thr Pro Gly Ala Glu Gly Phe Ala Phe Ala Cys Met Asp  
100 105 110

Ser Lys Thr Cys Glu His Val Val Ile Lys Ala Gly Gln Arg Gln Gly  
115 120 125

Thr Ala Thr Glu Ala Thr Val Leu Arg Ala Leu Thr His Pro Ser Val  
130 135 140

Val Gln Leu Lys Gly Thr Phe Thr Tyr Asn Lys Met Thr Cys Leu Ile  
145 150 155 160

Leu Pro Arg Tyr Arg Thr Asp Leu Tyr Cys Tyr Leu Ala Ala Lys Arg  
165 170 175



Asn Leu Pro Ile Cys Asp Ile Leu Ala Ile Gln Arg Ser Val Leu Arg  
180 185 190

Ala Leu Gln Tyr Leu His Asn Asn Ser Ile Ile His Arg Asp Ile Lys  
195 200 205

Ser Glu Asn Ile Phe Ile Asn His Pro Gly Asp Val Cys Val Gly Asp  
210 215 220

Phe Gly Ala Ala Cys Phe Pro Val Asp Ile Asn Ala Asn Arg Tyr Tyr  
225 230 235 240

Gly Trp Ala Gly Thr Ile Ala Thr Asn Ser Pro Glu Leu Leu Ala Arg  
245 250 255

Asp Pro Tyr Gly Pro Ala Val Asp Ile Trp Ser Ala Gly Ile Val Leu  
260 265 270

Phe Glu Met Ala Thr Gly Gln Asn Ser Leu Phe Glu Arg Asp Gly Leu  
275 280 285

Asp Gly Asn Cys Asp Ser Glu Arg Gln Ile Lys Leu Ile Ile Arg Arg  
290 295 300

Ser Gly Thr His Pro Asn Glu Phe Pro Ile Asn Pro Thr Ser Asn Leu  
305 310 315 320

Arg Arg Gln Tyr Ile Gly Leu Ala Lys Arg Ser Ser Arg Lys Pro Gly  
325 330 335

Ser Arg Pro Leu Trp Thr Asn Leu Tyr Glu Leu Pro Ile Asp Leu Glu  
340 345 350

Tyr Leu Ile Cys Lys Met Leu Ser Phe Asp Ala Arg His Arg Pro Ser  
355 360 365

Ala Glu Val Leu Leu Asn His Ser Val Phe Gln Thr Leu Pro Asp Pro  
370 375 380

Tyr Pro Asn Pro Met Glu Val Gly Asp  
385 390

<210> 40

<211> 354

<212> PRT

<213> Varicella zoster



<400> 40

Met Phe Leu Ile Gln Cys Leu Ile Ser Ala Val Ile Phe Tyr Ile Gln  
1 5 10 15

Val Thr Asn Ala Leu Ile Phe Lys Gly Asp His Val Ser Leu Gln Val  
20 25 30

Asn Ser Ser Leu Thr Ser Ile Leu Ile Pro Met Gln Asn Asp Asn Tyr  
35 40 45

Thr Glu Ile Lys Gly Gln Leu Val Phe Ile Gly Glu Gln Leu Pro Thr  
50 55 60

Gly Thr Asn Tyr Ser Gly Thr Leu Glu Leu Leu Tyr Ala Asp Thr Val  
65 70 75 80

Ala Phe Cys Phe Arg Ser Val Gln Val Ile Arg Tyr Asp Gly Cys Pro  
85 90 95

Arg Ile Arg Thr Ser Ala Phe Ile Ser Cys Arg Tyr Lys His Ser Trp  
100 105 110

His Tyr Gly Asn Ser Thr Asp Arg Ile Ser Thr Glu Pro Asp Ala Gly  
115 120 125

Val Met Leu Lys Ile Thr Lys Pro Gly Ile Asn Asp Ala Gly Val Tyr  
130 135 140

Val Leu Leu Val Arg Leu Asp His Ser Arg Ser Thr Asp Gly Phe Ile  
145 150 155 160

Leu Gly Val Asn Val Tyr Thr Ala Gly Ser His His Asn Ile His Gly  
165 170 175

Val Ile Tyr Thr Ser Pro Ser Leu Gln Asn Gly Tyr Ser Thr Arg Ala  
180 185 190

Leu Phe Gln Gln Ala Arg Leu Cys Asp Leu Pro Ala Thr Pro Lys Gly  
195 200 205

Ser Gly Thr Ser Leu Phe Gln His Met Leu Asp Leu Arg Ala Gly Lys  
210 215 220

Ser Leu Glu Asp Asn Pro Trp Leu His Glu Asp Val Val Thr Thr Glu  
237



225                      230                      235                      240

Asp Met Ser Thr Leu Pro Glu Lys Ser Leu Asn Asp Pro Pro Glu Asn  
260 265 270

Met Val Ile Val Ile Val Ile Ser Val Lys Arg Arg Arg Ile Lys Lys  
290 295 300

Ala Thr Pro Glu Ser Asp Val Met Leu Glu Ala Ala Ile Ala Gln Leu  
325 330 335

Val Lys

<400> 41

Ile Ile Thr Gly Thr Leu Arg Ile Thr Asn Pro Val Arg Ala Ser Val  
20 25 30

Ser Val Tyr Glu Pro Tyr Tyr His Ser Asp His Ala Glu Ser Ser Trp  
50 55 60

238



Tyr Ile Trp Pro Arg Asn Asp Tyr Asp Gly Phe Leu Glu Asn Ala His  
85 90 95

Glu His His Gly Val Tyr Asn Gln Gly Arg Gly Ile Asp Ser Gly Glu  
100 105 110

Arg Leu Met Gln Pro Thr Gln Met Ser Ala Gln Glu Asp Leu Gly Asp  
115 120 125

Asp Thr Gly Ile His Val Ile Pro Thr Leu Asn Gly Asp Asp Arg His  
130 135 140

Lys Ile Val Asn Val Asp Gln Arg Gln Tyr Gly Asp Val Phe Lys Gly  
145 150 155 160

Asp Leu Asn Pro Lys Pro Gln Gly Gln Arg Leu Ile Glu Val Ser Val  
165 170 175

Glu Glu Asn His Pro Phe Thr Leu Arg Ala Pro Ile Gln Arg Ile Tyr  
180 185 190

Gly Val Arg Tyr Thr Glu Thr Trp Ser Phe Leu Pro Ser Leu Thr Cys  
195 200 205

Thr Gly Asp Ala Ala Pro Ala Ile Gln His Ile Cys Leu Lys His Thr  
210 215 220

Thr Cys Phe Gln Asp Val Val Val Asp Val Asp Cys Ala Glu Asn Thr  
225 230 235 240

Lys Glu Asp Gln Leu Ala Glu Ile Ser Tyr Arg Phe Gln Gly Lys Lys  
245 250 255

Glu Ala Asp Gln Pro Trp Ile Val Val Asn Thr Ser Thr Leu Phe Asp  
260 265 270

Glu Leu Glu Leu Asp Pro Pro Glu Ile Glu Pro Gly Val Leu Lys Val  
275 280 285

Leu Arg Thr Glu Lys Gln Tyr Leu Gly Val Tyr Ile Trp Asn Met Arg  
290 295 300

Gly Ser Asp Gly Thr Ser Thr Tyr Ala Thr Phe Leu Val Thr Trp Lys  
305 310 315 320



Gly Asp Glu Lys Thr Arg Asn Pro Thr Pro Ala Val Thr Pro Gln Pro  
325 330 335

Arg Gly Ala Glu Phe His Met Trp Asn Tyr His Ser His Val Phe Ser  
340 345 350

Val Gly Asp Thr Phe Ser Leu Ala Met His Leu Gln Tyr Lys Ile His  
355 360 365

Glu Ala Pro Phe Asp Leu Leu Leu Glu Trp Leu Tyr Val Pro Ile Asp  
370 375 380

Pro Thr Cys Gln Pro Met Arg Leu Tyr Ser Thr Cys Leu Tyr His Pro  
385 390 395 400

Asn Ala Pro Gln Cys Leu Ser His Met Asn Ser Gly Cys Thr Phe Thr  
405 410 415

Ser Pro His Leu Ala Gln Arg Val Ala Ser Thr Val Tyr Gln Asn Cys  
420 425 430

Glu His Ala Asp Asn Tyr Thr Ala Tyr Cys Leu Gly Ile Ser His Met  
435 440 445

Glu Pro Ser Phe Gly Leu Ile Leu His Asp Gly Gly Thr Thr Leu Lys  
450 455 460

Phe Val Asp Thr Pro Glu Ser Leu Ser Gly Leu Tyr Val Phe Val Val  
465 470 475 480

Tyr Phe Asn Gly His Val Glu Ala Val Ala Tyr Thr Val Val Ser Thr  
485 490 495

Val Asp His Phe Val Asn Ala Ile Glu Glu Arg Gly Phe Pro Pro Thr  
500 505 510

Ala Gly Gln Pro Pro Ala Thr Thr Lys Pro Lys Glu Ile Thr Pro Val  
515 520 525

Asn Pro Gly Thr Ser Pro Leu Leu Arg Tyr Ala Ala Trp Thr Gly Gly  
530 535 540

Leu Ala Ala Val Val Leu Leu Cys Leu Val Ile Phe Leu Ile Cys Thr  
545 550 555 560



Ala Lys Arg Met Arg Val Lys Ala Tyr Arg Val Asp Lys Ser Pro Tyr  
565 570 575

Asn Gln Ser Met Tyr Tyr Ala Gly Leu Pro Val Asp Asp Phe Glu Asp  
580 585 590

Ser Glu Ser Thr Asp Thr Glu Glu Glu Phe Gly Asn Ala Ile Gly Gly  
595 600 605

Ser His Gly Gly Ser Ser Tyr Thr Val Tyr Ile Asp Lys Thr Arg  
610 615 620

<210> 42

<211> 1310

<212> PRT

<213> Varicella zoster

<400> 42

Met Asp Thr Pro Pro Met Gln Arg Ser Thr Pro Gln Arg Ala Gly Ser  
1 5 10 15

Pro Asp Thr Leu Glu Leu Met Asp Leu Leu Asp Ala Ala Ala Ala Ala  
20 25 30

Ala Glu His Arg Ala Arg Val Val Thr Ser Ser Gln Pro Asp Asp Leu  
35 40 45

Leu Phe Gly Glu Asn Gly Val Met Val Gly Arg Glu His Glu Ile Val  
50 55 60

Ser Ile Pro Ser Val Ser Gly Leu Gln Pro Glu Pro Arg Thr Glu Asp  
65 70 75 80

Val Gly Glu Glu Leu Thr Gln Asp Asp Tyr Val Cys Glu Asp Gly Gln  
85 90 95

Asp Leu Met Gly Ser Pro Val Ile Pro Leu Ala Glu Val Phe His Thr  
100 105 110

Arg Phe Ser Glu Ala Gly Ala Arg Glu Pro Thr Gly Ala Asp Arg Ser  
115 120 125

Leu Glu Thr Val Ser Leu Gly Thr Lys Leu Ala Arg Ser Pro Lys Pro  
130 135 140



Pro Met Asn Asp Gly Glu Thr Gly Arg Gly Thr Thr Pro Pro Phe Pro  
 145 150 155 160

Gln Ala Phe Ser Pro Val Ser Pro Ala Ser Pro Val Gly Asp Ala Ala  
 165 170 175

Gly Asn Asp Gln Arg Glu Asp Gln Arg Ser Ile Pro Arg Gln Thr Thr  
 180 185 190

Arg Gly Asn Ser Pro Gly Leu Pro Ser Val Val His Arg Asp Arg Gln  
 195 200 205

Thr Gln Ser Ile Ser Gly Lys Lys Pro Gly Asp Glu Gln Ala Gly His  
 210 215 220

Ala His Ala Ser Gly Asp Gly Val Val Leu Gln Lys Thr Gln Arg Pro  
 225 230 235 240

Ala Gln Gly Lys Ser Pro Lys Lys Lys Thr Leu Lys Val Lys Val Pro  
 245 250 255

Leu Pro Ala Arg Lys Pro Gly Gly Pro Val Pro Gly Pro Val Glu Gln  
 260 265 270

Leu Tyr His Val Leu Ser Asp Ser Val Pro Ala Lys Gly Ala Lys Ala  
 275 280 285

Asp Leu Pro Phe Glu Thr Asp Asp Thr Arg Pro Arg Lys His Asp Ala  
 290 295 300

Arg Gly Ile Thr Pro Arg Val Pro Gly Arg Ser Ser Gly Gly Lys Pro  
 305 310 315 320

Arg Ala Phe Leu Ala Leu Pro Gly Arg Ser His Ala Pro Asp Pro Ile  
 325 330 335

Glu Asp Asp Ser Pro Val Glu Lys Lys Pro Lys Ser Arg Glu Phe Val  
 340 345 350

Ser Ser Ser Ser Ser Ser Ser Ser Trp Gly Ser Ser Ser Glu Asp Glu  
 355 360 365

Asp Asp Glu Pro Arg Arg Val Ser Val Gly Ser Glu Thr Thr Gly Ser  
 370 375 380



Arg Ser Gly Arg Glu His Ala Pro Ser Pro Ser Asn Ser Asp Asp Ser  
 385 390 395 400  
 Asp Ser Asn Asp Gly Gly Ser Thr Lys Gln Asn Ile Gln Pro Gly Tyr  
 405 410 415  
 Arg Ser Ile Ser Gly Pro Asp Pro Arg Ile Arg Lys Thr Lys Arg Leu  
 420 425 430  
 Ala Gly Glu Pro Gly Arg Gln Arg Gln Lys Ser Phe Ser Leu Pro Arg  
 435 440 445  
 Ser Arg Thr Pro Ile Ile Pro Pro Val Ser Gly Pro Leu Met Met Pro  
 450 455 460  
 Asp Gly Ser Pro Trp Pro Gly Ser Ala Pro Leu Pro Ser Asn Arg Val  
 465 470 475 480  
 Arg Phe Gly Pro Ser Gly Glu Thr Arg Glu Gly His Trp Glu Asp Glu  
 485 490 495  
 Ala Val Arg Ala Ala Arg Ala Arg Tyr Glu Ala Ser Thr Glu Pro Val  
 500 505 510  
 Pro Leu Tyr Val Pro Glu Leu Gly Asp Pro Ala Arg Gln Tyr Arg Ala  
 515 520 525  
 Leu Ile Asn Leu Ile Tyr Cys Pro Asp Arg Asp Pro Ile Ala Trp Leu  
 530 535 540  
 Gln Asn Pro Lys Leu Thr Gly Val Asn Ser Ala Leu Asn Gln Phe Tyr  
 545 550 555 560  
 Gln Lys Leu Leu Pro Pro Gly Arg Ala Gly Thr Ala Val Thr Gly Ser  
 565 570 575  
 Val Ala Ser Pro Val Pro His Val Gly Glu Ala Met Ala Thr Gly Glu  
 580 585 590  
 Ala Leu Trp Ala Leu Pro His Ala Ala Ala Ala Val Ala Met Ser Arg  
 595 600 605  
 Arg Tyr Asp Arg Ala Gln Lys His Phe Ile Leu Gln Ser Leu Arg Arg  
 610 615 620



Ala Phe Ala Ser Met Ala Tyr Pro Glu Ala Thr Gly Ser Ser Pro Ala  
625 630 635 640

Ala Arg Ile Ser Arg Gly His Pro Ser Pro Thr Thr Pro Ala Thr Gln  
645 650 655

Ala Pro Asp Pro Gln Pro Ser Ala Ala Ala Arg Ser Leu Ser Val Cys  
660 665 670

Pro Pro Asp Asp Arg Leu Arg Thr Pro Arg Lys Arg Lys Ser Gln Pro  
675 680 685

Val Glu Ser Arg Ser Leu Leu Asp Lys Ile Arg Glu Thr Pro Val Ala  
690 695 700

Asp Ala Arg Val Ala Asp Asp His Val Val Ser Lys Ala Lys Arg Arg  
705 710 715 720

Val Ser Glu Pro Val Thr Ile Thr Ser Gly Pro Val Val Asp Pro Pro  
725 730 735

Ala Val Ile Thr Met Pro Leu Asp Gly Pro Ala Pro Asn Gly Gly Phe  
740 745 750

Arg Arg Ile Pro Arg Gly Ala Leu His Thr Pro Val Pro Ser Asp Gln  
755 760 765

Ala Arg Lys Ala Tyr Cys Thr Pro Glu Thr Ile Ala Arg Leu Val Asp  
770 775 780

Asp Pro Leu Phe Pro Thr Ala Trp Arg Pro Ala Leu Ser Phe Asp Pro  
785 790 795 800

Gly Ala Leu Ala Glu Ile Ala Ala Arg Arg Pro Gly Gly Gly Asp Arg  
805 810 815

Arg Phe Gly Pro Pro Ser Gly Val Glu Ala Leu Arg Arg Arg Cys Ala  
820 825 830

Trp Met Arg Gln Ile Pro Asp Pro Glu Asp Val Arg Leu Leu Ile Ile  
835 840 845

Tyr Asp Pro Leu Pro Gly Glu Asp Ile Asn Gly Pro Leu Glu Ser Thr  
850 855 860



Leu Ala Thr Asp Pro Gly Pro Ser Trp Ser Pro Ser Arg Gly Gly Leu  
 865 870 875 880

Ser Val Val Leu Ala Ala Leu Ser Asn Arg Leu Cys Leu Pro Ser Thr  
 885 890 895

His Ala Trp Ala Gly Asn Trp Thr Gly Pro Pro Asp Val Ser Ala Leu  
 900 905 910

Asn Ala Arg Gly Val Leu Leu Leu Ser Thr Arg Asp Leu Ala Phe Ala  
 915 920 925

Gly Ala Val Glu Tyr Leu Gly Ser Arg Leu Ala Ser Ala Arg Arg Arg  
 930 935 940

Leu Leu Val Leu Asp Ala Val Ala Leu Glu Arg Trp Pro Arg Asp Gly  
 945 950 955 960

Pro Ala Leu Ser Gln Tyr His Val Tyr Val Arg Ala Pro Ala Arg Pro  
 965 970 975

Asp Ala Gln Ala Val Val Arg Trp Pro Asp Ser Ala Val Thr Glu Gly  
 980 985 990

Leu Ala Arg Ala Val Phe Ala Ser Ser Arg Thr Phe Gly Pro Ala Ser  
 995 1000 1005

Phe Ala Arg Ile Glu Thr Ala Phe Ala Asn Leu Tyr Pro Gly Glu  
 1010 1015 1020

Gln Pro Leu Cys Leu Cys Arg Gly Gly Asn Val Ala Tyr Thr Val  
 1025 1030 1035

Cys Thr Arg Ala Gly Pro Lys Thr Arg Val Pro Leu Ser Pro Arg  
 1040 1045 1050

Glu Tyr Arg Gln Tyr Val Leu Pro Gly Phe Asp Gly Cys Lys Asp  
 1055 1060 1065

Leu Ala Arg Gln Ser Arg Gly Leu Gly Leu Gly Ala Ala Asp Phe  
 1070 1075 1080

Val Asp Glu Ala Ala His Ser His Arg Ala Ala Asn Arg Trp Gly  
 1085 1090 1095



Leu Gly Ala Ala Leu Arg Pro Val Phe Leu Pro Glu Gly Arg Arg  
 1100 1105 1110  
  
 Pro Gly Ala Ala Gly Pro Glu Ala Gly Asp Val Pro Thr Trp Ala  
 1115 1120 1125  
  
 Arg Val Phe Cys Arg His Ala Leu Leu Glu Pro Asp Pro Ala Ala  
 1130 1135 1140  
  
 Glu Pro Leu Val Leu Pro Pro Val Ala Gly Arg Ser Val Ala Leu  
 1145 1150 1155  
  
 Tyr Ala Ser Ala Asp Glu Ala Arg Asn Ala Leu Pro Pro Ile Pro  
 1160 1165 1170  
  
 Arg Val Met Trp Pro Pro Gly Phe Gly Ala Ala Glu Thr Val Leu  
 1175 1180 1185  
  
 Glu Gly Ser Asp Gly Thr Arg Phe Val Phe Gly His His Gly Gly  
 1190 1195 1200  
  
 Ser Glu Arg Pro Ser Glu Thr Gln Ala Gly Arg Gln Arg Arg Thr  
 1205 1210 1215  
  
 Ala Asp Asp Arg Glu His Ala Leu Glu Leu Asp Asp Trp Glu Val  
 1220 1225 1230  
  
 Gly Cys Glu Asp Ala Trp Asp Ser Glu Glu Gly Gly Gly Asp Asp  
 1235 1240 1245  
  
 Gly Asp Ala Pro Gly Ser Ser Phe Gly Val Ser Ile Val Ser Val  
 1250 1255 1260  
  
 Ala Pro Gly Val Leu Arg Asp Arg Arg Val Gly Leu Arg Pro Ala  
 1265 1270 1275  
  
 Val Lys Val Glu Leu Leu Ser Ser Ser Ser Ser Glu Asp Glu  
 1280 1285 1290  
  
 Asp Asp Val Trp Gly Gly Arg Gly Gly Arg Ser Pro Pro Gln Ser  
 1295 1300 1305  
  
 Arg Gly  
 1310



<210> 43  
 <211> 1002  
 <212> DNA  
 <213> Varicella zoster

<220>  
 <221> CDS  
 <222> (1)..(1002)

<400> 43  
 atg cat tta aag cct acc aga ttt ttc cac gca aac caa ccg cca atg 48  
 Met His Leu Lys Pro Thr Arg Phe Phe His Ala Asn Gln Pro Pro Met  
 1 5 10 15  
 ccg cat tca tac gag atg gag gac tta tgc ttc gac gac atg caa tat 96  
 Pro His Ser Tyr Glu Met Glu Asp Leu Cys Phe Asp Asp Met Gln Tyr  
 20 25 30  
 cgc tgg tct ccc tcg aac aca ccc tat cga agt atg tct agg cga tat 144  
 Arg Trp Ser Pro Ser Asn Thr Pro Tyr Arg Ser Met Ser Arg Arg Tyr  
 35 40 45  
 aaa tcc gta tct cgg agc ggg cct tcg atg cgt gta cgc tcc aga acg 192  
 Lys Ser Val Ser Arg Ser Gly Pro Ser Met Arg Val Arg Ser Arg Thr  
 50 55 60  
 cca tgc cgc cgt caa acc att cga gga aaa ctt atg tca aag gag cgg 240  
 Pro Cys Arg Arg Gln Thr Ile Arg Gly Lys Leu Met Ser Lys Glu Arg  
 65 70 75 80  
 tct gtg tac cgc cat tat ttt aat tac atc gca agg tcc ccc cca gaa 288  
 Ser Val Tyr Arg His Tyr Phe Asn Tyr Ile Ala Arg Ser Pro Pro Glu  
 85 90 95  
 gaa cta gct acc gtt aga ggc tta atc gtg cca att att aag acg acc 336  
 Glu Leu Ala Thr Val Arg Gly Leu Ile Val Pro Ile Ile Lys Thr Thr  
 100 105 110  
 cct gtc acc ctt ccg ttt aac ttg ggt cag aca gtg gcg gat aac tgc 384  
 Pro Val Thr Leu Pro Phe Asn Leu Gly Gln Thr Val Ala Asp Asn Cys  
 115 120 125  
 ctg tcg tta tcc gga atg ggt tat cat tta ggt ctc gga ggt tat tgt 432  
 Leu Ser Leu Ser Gly Met Gly Tyr His Leu Gly Leu Gly Gly Tyr Cys  
 130 135 140  
 ccg aca tgc act gca tct gga gaa ccg cgt cta tgt cga acc gat cgg 480  
 Pro Thr Cys Thr Ala Ser Gly Glu Pro Arg Leu Cys Arg Thr Asp Arg  
 145 150 155 160  
 gcg gct ctg ata cta gca tat gtt cag cag ctt aac aac ata tac gaa 528  
 Ala Ala Leu Ile Leu Ala Tyr Val Gln Gln Leu Asn Asn Ile Tyr Glu  
 165 170 175  
 tat cgt gtg ttt ctt gca tcc att ttg gcg cta tca gac cga gcc aac 576  
 Tyr Arg Val Phe Leu Ala Ser Ile Leu Ala Leu Ser Asp Arg Ala Asn  
 180 185 190



atg caa gca gcg tcc gct gaa ccc cta ttg tcg agc gta ttg gca caa	624
Met Gln Ala Ala Ser Ala Glu Pro Leu Leu Ser Ser Val Leu Ala Gln	
195 200 205	
ccg gaa tta ttt ttt atg tat cat att atg agg gag ggg ggc atg cga	672
Pro Glu Leu Phe Phe Met Tyr His Ile Met Arg Glu Gly Gly Met Arg	
210 215 220	
gat ata cgc gta ctt ttt tat cgt gat gga gat gcc gga ggg ttt atg	720
Asp Ile Arg Val Leu Phe Tyr Arg Asp Gly Asp Ala Gly Gly Phe Met	
225 230 235 240	
atg tat gtt ata ttt ccg ggg aaa tct gtt cac ctc cat tac aga cta	768
Met Tyr Val Ile Phe Pro Gly Lys Ser Val His Leu His Tyr Arg Leu	
245 250 255	
atc gat cat ata cag gcc gcg tgt cgg ggg tat aaa ata gtc gca cac	816
Ile Asp His Ile Gln Ala Ala Cys Arg Gly Tyr Lys Ile Val Ala His	
260 265 270	
gtt tgg cag aca aca ttt tta ctg tcg gta tgt cgc aac cca gaa caa	864
Val Trp Gln Thr Thr Phe Leu Leu Ser Val Cys Arg Asn Pro Glu Gln	
275 280 285	
caa aca gag act gtg gtg cca tcc att gga aca tcg gac gtt tac tgt	912
Gln Thr Glu Thr Val Val Pro Ser Ile Gly Thr Ser Asp Val Tyr Cys	
290 295 300	
aaa atg tgt gac ctt aac ttt gat gga gaa ttg ctt ttg gaa tac aaa	960
Lys Met Cys Asp Leu Asn Phe Asp Gly Glu Leu Leu Leu Glu Tyr Lys	
305 310 315 320	
aga ctc tac gca tta ttt gat gac ttt gtt cct cct cgg tga	1002
Arg Leu Tyr Ala Leu Phe Asp Asp Phe Val Pro Pro Arg	
325 330	

<210> 44  
 <211> 333  
 <212> PRT  
 <213> Varicella zoster

<400> 44

Met His Leu Lys Pro Thr Arg Phe Phe His Ala Asn Gln Pro Pro Met
1 5 10 15

Pro His Ser Tyr Glu Met Glu Asp Leu Cys Phe Asp Asp Met Gln Tyr
20 25 30

Arg Trp Ser Pro Ser Asn Thr Pro Tyr Arg Ser Met Ser Arg Arg Tyr
35 40 45

Lys Ser Val Ser Arg Ser Gly Pro Ser Met Arg Val Arg Ser Arg Thr
50 55 60



Pro Cys Arg Arg Gln Thr Ile Arg Gly Lys Leu Met Ser Lys Glu Arg  
 65 70 75 80

Ser Val Tyr Arg His Tyr Phe Asn Tyr Ile Ala Arg Ser Pro Pro Glu  
 85 90 95

Glu Leu Ala Thr Val Arg Gly Leu Ile Val Pro Ile Ile Lys Thr Thr  
 100 105 110

Pro Val Thr Leu Pro Phe Asn Leu Gly Gln Thr Val Ala Asp Asn Cys  
 115 120 125

Leu Ser Leu Ser Gly Met Gly Tyr His Leu Gly Leu Gly Gly Tyr Cys  
 130 135 140

Pro Thr Cys Thr Ala Ser Gly Glu Pro Arg Leu Cys Arg Thr Asp Arg  
 145 150 155 160

Ala Ala Leu Ile Leu Ala Tyr Val Gln Gln Leu Asn Asn Ile Tyr Glu  
 165 170 175

Tyr Arg Val Phe Leu Ala Ser Ile Leu Ala Leu Ser Asp Arg Ala Asn  
 180 185 190

Met Gln Ala Ala Ser Ala Glu Pro Leu Leu Ser Ser Val Leu Ala Gln  
 195 200 205

Pro Glu Leu Phe Phe Met Tyr His Ile Met Arg Glu Gly Gly Met Arg  
 210 215 220

Asp Ile Arg Val Leu Phe Tyr Arg Asp Gly Asp Ala Gly Gly Phe Met  
 225 230 235 240

Met Tyr Val Ile Phe Pro Gly Lys Ser Val His Leu His Tyr Arg Leu  
 245 250 255

Ile Asp His Ile Gln Ala Ala Cys Arg Gly Tyr Lys Ile Val Ala His  
 260 265 270

Val Trp Gln Thr Thr Phe Leu Leu Ser Val Cys Arg Asn Pro Glu Gln  
 275 280 285

Gln Thr Glu Thr Val Val Pro Ser Ile Gly Thr Ser Asp Val Tyr Cys  
 290 295 300



Lys Met Cys Asp Leu Asn Phe Asp Gly Glu Leu Leu Leu Glu Tyr Lys  
 305 310 315 320

Arg Leu Tyr Ala Leu Phe Asp Asp Phe Val Pro Pro Arg  
 325 330

<210> 45  
 <211> 1533  
 <212> DNA  
 <213> Varicella zoster

<220>  
 <221> CDS  
 <222> (1)..(1533)

<400> 45  
 atg gat gct gac gac aca ccc ccc aac ctc caa ata tct cca act gca 48  
 Met Asp Ala Asp Asp Thr Pro Pro Asn Leu Gln Ile Ser Pro Thr Ala  
 1 5 10 15  
 gga cct ttg cgt tcc cac cac aat acc gac gga cat gaa cca aat gca 96  
 Gly Pro Leu Arg Ser His His Asn Thr Asp Gly His Glu Pro Asn Ala  
 20 25 30  
 acc gca gcc gat cag caa gaa cga gaa tcc acc aac ccc aca cac gga 144  
 Thr Ala Ala Asp Gln Gln Glu Arg Glu Ser Thr Asn Pro Thr His Gly  
 35 40 45  
 tgt gta aat cat cca tgg gcc aat ccg tca act gca aca tgc atg gaa 192  
 Cys Val Asn His Pro Trp Ala Asn Pro Ser Thr Ala Thr Cys Met Glu  
 50 55 60  
 tca cca gaa cga tca caa cag aca agc tta ttt tta tta aag cac ggc 240  
 Ser Pro Glu Arg Ser Gln Gln Thr Ser Leu Phe Leu Leu Lys His Gly  
 65 70 75 80  
 tta acg aga gat cca ata cat caa cgc gaa agg gtg gac gtt ttt cca 288  
 Leu Thr Arg Asp Pro Ile His Gln Arg Glu Arg Val Asp Val Phe Pro  
 85 90 95  
 caa ttt aac aaa ccc cca tgg gtt ttt aga att tcc aaa tta tcc cgt 336  
 Gln Phe Asn Lys Pro Pro Trp Val Phe Arg Ile Ser Lys Leu Ser Arg  
 100 105 110  
 tta att gta ccc atc ttc acg ctc aat gaa cag tta tgt ttt tct aaa 384  
 Leu Ile Val Pro Ile Phe Thr Leu Asn Glu Gln Leu Cys Phe Ser Lys  
 115 120 125  
 tta cag att cga gat aga ccc agg ttt gcg gga cgg gga acg tat ggg 432  
 Leu Gln Ile Arg Asp Arg Pro Arg Phe Ala Gly Arg Gly Thr Tyr Gly  
 130 135 140  
 cgt gtt cat ata tac cca tcg tca aaa ata gct gta aaa acc atg gac 480  
 Arg Val His Ile Tyr Pro Ser Ser Lys Ile Ala Val Lys Thr Met Asp  
 145 150 155 160  
 agt cgt gtt ttt aat aga gag tta att aac gcg att tta gcg agt gag 528  
 250



Ser	Arg	Val	Phe	Asn	Arg	Glu	Leu	Ile	Asn	Ala	Ile	Leu	Ala	Ser	Glu	
				165					170					175		
ggc	tct	ata	cga	gca	ggg	gaa	agg	cta	ggc	att	tct	agc	ata	ggt	tgc	576
Gly	Ser	Ile	Arg	Ala	Gly	Glu	Arg	Leu	Gly	Ile	Ser	Ser	Ile	Val	Cys	
			180					185					190			
ctt	tta	ggc	ttt	tcg	tta	caa	acc	aaa	cag	cta	ctg	ttt	ccg	gca	tac	624
Leu	Leu	Gly	Phe	Ser	Leu	Gln	Thr	Lys	Gln	Leu	Leu	Phe	Pro	Ala	Tyr	
		195					200					205				
gac	atg	gat	atg	gat	gaa	tac	att	ggt	cgc	ctg	tcc	aga	cgg	ttg	aca	672
Asp	Met	Asp	Met	Asp	Glu	Tyr	Ile	Val	Arg	Leu	Ser	Arg	Arg	Leu	Thr	
	210					215					220					
ata	cct	gat	cac	ata	gac	aga	aaa	att	gcc	cat	gta	ttt	tta	gat	ttg	720
Ile	Pro	Asp	His	Ile	Asp	Arg	Lys	Ile	Ala	His	Val	Phe	Leu	Asp	Leu	
225					230					235					240	
gct	caa	gcg	ttg	acg	ttt	tta	aat	cga	acg	tgc	ggc	ctg	acc	cac	cta	768
Ala	Gln	Ala	Leu	Thr	Phe	Leu	Asn	Arg	Thr	Cys	Gly	Leu	Thr	His	Leu	
				245					250					255		
gat	gtg	aaa	tgt	ggc	aat	att	ttt	ctt	aac	gtc	gac	aac	ttt	gcc	tcg	816
Asp	Val	Lys	Cys	Gly	Asn	Ile	Phe	Leu	Asn	Val	Asp	Asn	Phe	Ala	Ser	
			260					265					270			
ttg	gaa	ata	acc	aca	gca	gta	atc	gga	gac	tat	agc	cta	gta	aca	tta	864
Leu	Glu	Ile	Thr	Thr	Ala	Val	Ile	Gly	Asp	Tyr	Ser	Leu	Val	Thr	Leu	
		275					280					285				
aat	acg	tat	tcc	ctt	tgt	act	cga	gcg	ata	ttt	gaa	ggt	gga	aat	cca	912
Asn	Thr	Tyr	Ser	Leu	Cys	Thr	Arg	Ala	Ile	Phe	Glu	Val	Gly	Asn	Pro	
	290					295					300					
tcc	cac	ccg	gag	cac	gta	cta	cgc	gta	ccc	cgg	gat	gca	tcg	cag	atg	960
Ser	His	Pro	Glu	His	Val	Leu	Arg	Val	Pro	Arg	Asp	Ala	Ser	Gln	Met	
305					310					315					320	
tca	ttt	cgt	ttg	gtg	ttg	agt	cat	gga	aca	aac	caa	ccc	cct	gaa	atc	1008
Ser	Phe	Arg	Leu	Val	Leu	Ser	His	Gly	Thr	Asn	Gln	Pro	Pro	Glu	Ile	
				325					330					335		
ttg	ctt	gat	tat	att	aat	gga	acg	ggc	ctt	act	aaa	tat	act	gga	acc	1056
Leu	Leu	Asp	Tyr	Ile	Asn	Gly	Thr	Gly	Leu	Thr	Lys	Tyr	Thr	Gly	Thr	
			340					345					350			
ttg	ccc	caa	aga	ggt	gga	ctt	gcg	att	gat	ctt	tat	gca	ttg	ggc	caa	1104
Leu	Pro	Gln	Arg	Val	Gly	Leu	Ala	Ile	Asp	Leu	Tyr	Ala	Leu	Gly	Gln	
		355					360					365				
gca	ctc	tta	gaa	ggt	atc	ctg	cta	gga	cgt	ctt	ccc	gga	caa	ctg	ccc	1152
Ala	Leu	Leu	Glu	Val	Ile	Leu	Leu	Gly	Arg	Leu	Pro	Gly	Gln	Leu	Pro	
			370			375					380					
att	tca	gta	cat	cgg	acc	ccg	cat	tat	cac	tac	tac	ggc	cat	aag	tta	1200
Ile	Ser	Val	His	Arg	Thr	Pro	His	Tyr	His	Tyr	Tyr	Gly	His	Lys	Leu	
385					390					395					400	
tca	cca	gat	ttg	gcg	ctt	gat	acg	ctg	gca	tat	cga	tgt	gtc	ctg	gcg	1248



Ser	Pro	Asp	Leu	Ala	Leu	Asp	Thr	Leu	Ala	Tyr	Arg	Cys	Val	Leu	Ala	
			405						410					415		
cca	tat	ata	ctc	cca	tct	gac	atc	ccc	ggg	gac	tta	aat	tat	aat	ccc	1296
Pro	Tyr	Ile	Leu	Pro	Ser	Asp	Ile	Pro	Gly	Asp	Leu	Asn	Tyr	Asn	Pro	
			420					425					430			
ttt	ata	cac	gcc	gga	gag	ctg	aac	acc	cgt	att	tcc	cgg	aat	tct	tta	1344
Phe	Ile	His	Ala	Gly	Glu	Leu	Asn	Thr	Arg	Ile	Ser	Arg	Asn	Ser	Leu	
			435				440					445				
cgc	cgg	ata	ttc	cag	tgt	cac	gca	gtg	cgt	tac	ggc	gta	acg	cac	tca	1392
Arg	Arg	Ile	Phe	Gln	Cys	His	Ala	Val	Arg	Tyr	Gly	Val	Thr	His	Ser	
			450			455					460					
aag	ctt	ttc	gaa	ggc	ata	cgc	att	ccg	gcc	tca	tta	tac	cca	gcc	act	1440
Lys	Leu	Phe	Glu	Gly	Ile	Arg	Ile	Pro	Ala	Ser	Leu	Tyr	Pro	Ala	Thr	
465					470				475						480	
gtt	gtt	aca	tcg	ttg	ttg	tgt	cac	gat	aat	tca	gaa	ata	cgc	tcg	gat	1488
Val	Val	Thr	Ser	Leu	Leu	Cys	His	Asp	Asn	Ser	Glu	Ile	Arg	Ser	Asp	
				485					490					495		
cac	cct	tta	tta	tgg	cac	gat	cgg	gat	tgg	ata	gga	tcg	aca	taa		1533
His	Pro	Leu	Leu	Trp	His	Asp	Arg	Asp	Trp	Ile	Gly	Ser	Thr			
			500					505					510			

Met Asp Ala Asp Asp Thr Pro Pro Asn Leu Gln Ile Ser Pro Thr Ala  
1 5 10 15

Gly Pro Leu Arg Ser His His Asn Thr Asp Gly His Glu Pro Asn Ala  
20 25 30

Thr Ala Ala Asp Gln Gln Glu Arg Glu Ser Thr Asn Pro Thr His Gly  
35 40 45

Cys Val Asn His Pro Trp Ala Asn Pro Ser Thr Ala Thr Cys Met Glu  
50 55 60

Ser Pro Glu Arg Ser Gln Gln Thr Ser Leu Phe Leu Leu Lys His Gly  
65 70 75 80

Leu Thr Arg Asp Pro Ile His Gln Arg Glu Arg Val Asp Val Phe Pro  
85 90 95

Gln Phe Asn Lys Pro Pro Trp Val Phe Arg Ile Ser Lys Leu Ser Arg  
252



100	105	110
Leu Ile Val Pro Ile Phe Thr 115	Leu Asn Glu Gln 120	Leu Cys Phe Ser Lys 125
Leu Gln Ile Arg Asp Arg 130	Pro Arg Phe Ala Gly 135	Arg Gly Thr Tyr Gly 140
Arg Val His Ile Tyr 145	Pro Ser Ser Lys Ile 150	Ala Val Lys Thr Met Asp 155 160
Ser Arg Val Phe 165	Asn Arg Glu Leu Ile 170	Asn Ala Ile Leu Ala Ser Glu 175
Gly Ser Ile Arg Ala Gly 180	Glu Arg Leu Gly Ile 185	Ser Ser Ile Val Cys 190
Leu Leu Gly Phe Ser Leu 195	Gln Thr Lys Gln Leu 200	Leu Phe Pro Ala Tyr 205
Asp Met Asp Met Asp 210	Glu Tyr Ile Val Arg 215	Leu Ser Arg Arg Leu Thr 220
Ile Pro Asp His Ile 225	Asp Arg Lys Ile Ala 230	His Val Phe Leu Asp Leu 235 240
Ala Gln Ala Leu Thr 245	Phe Leu Asn Arg Thr 250	Cys Gly Leu Thr His Leu 255
Asp Val Lys Cys Gly 260	Asn Ile Phe Leu Asn 265	Val Asp Asn Phe Ala Ser 270
Leu Glu Ile Thr Thr 275	Ala Val Ile Gly Asp 280	Tyr Ser Leu Val Thr Leu 285
Asn Thr Tyr Ser Leu 290	Cys Thr Arg Ala Ile 295	Phe Glu Val Gly Asn Pro 300
Ser His Pro Glu His 305	Val Leu Arg Val Pro 310	Arg Asp Ala Ser Gln Met 315 320
Ser Phe Arg Leu Val 325	Leu Ser His Gly Thr 330	Asn Gln Pro Pro Glu Ile 335
Leu Leu Asp Tyr Ile 253	Asn Gly Thr Gly Leu Thr Lys Tyr Thr Gly Thr	



340	345	350
Leu Pro Gln Arg Val Gly Leu Ala Ile Asp Leu Tyr Ala Leu Gly Gln		
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Ala Leu Leu Glu Val Ile Leu Leu Gly Arg Leu Pro Gly Gln Leu Pro		
370	375	380
Ile Ser Val His Arg Thr Pro His Tyr His Tyr Tyr Gly His Lys Leu		
385	390	395
Ser Pro Asp Leu Ala Leu Asp Thr Leu Ala Tyr Arg Cys Val Leu Ala		
405	410	415
Pro Tyr Ile Leu Pro Ser Asp Ile Pro Gly Asp Leu Asn Tyr Asn Pro		
420	425	430
Phe Ile His Ala Gly Glu Leu Asn Thr Arg Ile Ser Arg Asn Ser Leu		
435	440	445
Arg Arg Ile Phe Gln Cys His Ala Val Arg Tyr Gly Val Thr His Ser		
450	455	460
Lys Leu Phe Glu Gly Ile Arg Ile Pro Ala Ser Leu Tyr Pro Ala Thr		
465	470	475
Val Val Thr Ser Leu Leu Cys His Asp Asn Ser Glu Ile Arg Ser Asp		
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His Pro Leu Leu Trp His Asp Arg Asp Trp Ile Gly Ser Thr		
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aaa cgg tac aac gag ctt gtt acg tgc aac gga gaa acc gtt gct ttg		96
Lys Arg Tyr Asn Glu Leu Val Thr Cys Asn Gly Glu Thr Val Ala Leu		



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aac tca gag ttc ttt gaa gac ttt gac ttt gat gag aat gta aca gag				144
Asn Ser Glu Phe Phe Glu Asp Phe Asp Phe Asp Glu Asn Val Thr Glu				
	35	40	45	
gac gcc gat aaa tcc aca caa cgc cgc cca cga gtg atc gat gta aca				192
Asp Ala Asp Lys Ser Thr Gln Arg Arg Pro Arg Val Ile Asp Val Thr				
	50	55	60	
cca aaa cga aaa cct tcg gga aag agc tcc cat tcc aaa tgc gca aaa				240
Pro Lys Arg Lys Pro Ser Gly Lys Ser Ser His Ser Lys Cys Ala Lys				
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tgt taa				246
Cys				

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Asn Ser Glu Phe Phe Glu Asp Phe Asp Phe Asp Glu Asn Val Thr Glu
35 40 45

Asp Ala Asp Lys Ser Thr Gln Arg Arg Pro Arg Val Ile Asp Val Thr
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Pro Lys Arg Lys Pro Ser Gly Lys Ser Ser His Ser Lys Cys Ala Lys
65 70 75 80

Cys

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1 5 10 15	
atc cca acg tac acg ttg tgt att aaa gca ttg tat aaa aac acg cat	96
Ile Pro Thr Tyr Thr Leu Cys Ile Lys Ala Leu Tyr Lys Asn Thr His	
20 25 30	
gcg ggc ttg ctg ttc tca ttt cta ggt ttt gtc tta aat aca ccc gcc	144
Ala Gly Leu Leu Phe Ser Phe Leu Gly Phe Val Leu Asn Thr Pro Ala	
35 40 45	
atg agc atc tct gga ccc cca acg acg ttt att tta tat agg tta cat	192
Met Ser Ile Ser Gly Pro Pro Thr Thr Phe Ile Leu Tyr Arg Leu His	
50 55 60	
ggg gtt agg cgg gtt ctt cac tgg act tta ccg gat cat gaa caa aca	240
Gly Val Arg Arg Val Leu His Trp Thr Leu Pro Asp His Glu Gln Thr	
65 70 75 80	
ctc tac gca ttt acg ggt ggg tca aga tca atg gcg gtg aag acg gac	288
Leu Tyr Ala Phe Thr Gly Gly Ser Arg Ser Met Ala Val Lys Thr Asp	
85 90 95	
gct cga tgt gat aca atg agc ggt ggt atg atc gtc ctt caa cac acc	336
Ala Arg Cys Asp Thr Met Ser Gly Gly Met Ile Val Leu Gln His Thr	
100 105 110	
cat aca gtg acc ctg cta acc ata gac tgt tct act gac ttt tca tca	384
His Thr Val Thr Leu Leu Thr Ile Asp Cys Ser Thr Asp Phe Ser Ser	
115 120 125	
tac gca ttt acg cac cgg gat ttc cac tta cag gac aaa ccc cac gca	432
Tyr Ala Phe Thr His Arg Asp Phe His Leu Gln Asp Lys Pro His Ala	
130 135 140	
aca ttt gcg atg ccg ttt atg tcc tgg gtc ggt tct gac cca aca tct	480
Thr Phe Ala Met Pro Phe Met Ser Trp Val Gly Ser Asp Pro Thr Ser	
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cag ctg tac agt aat gtg ggg ggg gta cta tcc gta ata acg gaa gat	528
Gln Leu Tyr Ser Asn Val Gly Gly Val Leu Ser Val Ile Thr Glu Asp	
165 170 175	
gac cta tcc atg tgt atc tca att gtt ata tac ggt tta cgg gta aac	576
Asp Leu Ser Met Cys Ile Ser Ile Val Ile Tyr Gly Leu Arg Val Asn	
180 185 190	
aga cct gac gat cag acc aca cca aca cca acc ccg cac cag tat aca	624
Arg Pro Asp Asp Gln Thr Thr Pro Thr Pro Thr Pro His Gln Tyr Thr	
195 200 205	
tcg caa agg cgg cag cct gaa acc aac tgt cct tct tca cca caa ccg	672
Ser Gln Arg Arg Gln Pro Glu Thr Asn Cys Pro Ser Ser Pro Gln Pro	
210 215 220	
gcc ttt ttc aca tca gac gac gac gtt ctt tcg tta ata tta cgg gac	720
Ala Phe Phe Thr Ser Asp Asp Asp Val Leu Ser Leu Ile Leu Arg Asp	
225 230 235 240	



gcc gca aac gcg taa  
Ala Ala Asn Ala

735

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Ala Gly Leu Leu Phe Ser Phe Leu Gly Phe Val Leu Asn Thr Pro Ala  
35 40 45

Met Ser Ile Ser Gly Pro Pro Thr Thr Phe Ile Leu Tyr Arg Leu His  
50 55 60

Gly Val Arg Arg Val Leu His Trp Thr Leu Pro Asp His Glu Gln Thr  
65 70 75 80

Leu Tyr Ala Phe Thr Gly Gly Ser Arg Ser Met Ala Val Lys Thr Asp  
85 90 95

Ala Arg Cys Asp Thr Met Ser Gly Gly Met Ile Val Leu Gln His Thr  
100 105 110

His Thr Val Thr Leu Leu Thr Ile Asp Cys Ser Thr Asp Phe Ser Ser  
115 120 125

Tyr Ala Phe Thr His Arg Asp Phe His Leu Gln Asp Lys Pro His Ala  
130 135 140

Thr Phe Ala Met Pro Phe Met Ser Trp Val Gly Ser Asp Pro Thr Ser  
145 150 155 160

Gln Leu Tyr Ser Asn Val Gly Gly Val Leu Ser Val Ile Thr Glu Asp  
165 170 175

Asp Leu Ser Met Cys Ile Ser Ile Val Ile Tyr Gly Leu Arg Val Asn  
180 185 190



Arg Pro Asp Asp Gln Thr Thr Pro Thr Pro Thr Pro His Gln Tyr Thr  
 195 200 205

Ser Gln Arg Arg Gln Pro Glu Thr Asn Cys Pro Ser Ser Pro Gln Pro  
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Thr Ser Pro Ala Thr Arg Gly Asp Ser Ser Glu Ser Lys Pro Gly Ala	
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Ser Val Asp Val Asn Gly Lys Met Glu Tyr Gly Ser Ala Pro Gly Pro	
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Leu Asn Gly Arg Asp Thr Ser Arg Gly Pro Gly Ala Phe Cys Thr Pro	
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Gly Trp Glu Ile His Pro Ala Arg Leu Val Glu Asp Ile Asn Arg Val	
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Phe Leu Cys Ile Ala Gln Ser Ser Gly Arg Val Thr Arg Asp Ser Arg	
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Arg Leu Arg Arg Ile Cys Leu Asp Phe Tyr Leu Met Gly Arg Thr Arg	
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Gln Arg Pro Thr Leu Ala Cys Trp Glu Glu Leu Leu Gln Leu Gln Pro	
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Thr Gln Thr Gln Cys Leu Arg Ala Thr Leu Met Glu Val Ser His Arg	
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Pro Pro Arg Gly Glu Asp Gly Phe Ile Glu Ala Pro Asn Val Pro Leu	
135 140 145	



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atc tcg ggt aaa aag ccg ggc gat gag caa gcg ggt cat gcg cat gca Ile Ser Gly Lys Lys Pro Gly Asp Glu Gln Ala Gly His Ala His Ala 775 780 785	16432
tcg ggg gac gga gta gtt ctc cag aaa act caa cgg ccc gct cag gga Ser Gly Asp Gly Val Val Leu Gln Lys Thr Gln Arg Pro Ala Gln Gly 790 795 800	16480
aag agc ccg aag aaa aag act ttg aag gtt aag gtc cca ctc ccg gcg Lys Ser Pro Lys Lys Lys Thr Leu Lys Val Lys Val Pro Leu Pro Ala 805 810 815	16528
cgg aaa ccc ggt gga cct gta ccc ggc ccg gtt gag caa ttg tac cac Arg Lys Pro Gly Gly Pro Val Pro Gly Pro Val Glu Gln Leu Tyr His 820 825 830 835	16576
gtc ctt tcg gac agc gtt ccc gct aag ggg gca aag gcg gac ctg ccg Val Leu Ser Asp Ser Val Pro Ala Lys Gly Ala Lys Ala Asp Leu Pro 840 845 850	16624
ttt gag acc gat gat acc cgc cca agg aaa cat gat gcc cgg ggt ata Phe Glu Thr Asp Asp Thr Arg Pro Arg Lys His Asp Ala Arg Gly Ile 855 860 865	16672
aca cct cgc gtc cct gga cgt tcg tcg ggg ggc aaa cct aga gcg ttt Thr Pro Arg Val Pro Gly Arg Ser Ser Gly Gly Lys Pro Arg Ala Phe 870 875 880	16720
ttg gcc ctg ccg gga aga tcc cac gca cca gac ccg att gag gat gac Leu Ala Leu Pro Gly Arg Ser His Ala Pro Asp Pro Ile Glu Asp Asp 885 890 895	16768



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Ser Pro Val Glu Lys Lys Pro Lys Ser Arg Glu Phe Val Ser Ser Ser	
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tcc tct tcc tcg tcg tgg gga tcg tca tcg gag gat gaa gac gat gaa	16864
Ser Ser Ser Ser Ser Trp Gly Ser Ser Ser Glu Asp Glu Asp Asp Glu	
920 925 930	
ccc cgg cgc gtt tcg gtg gga agt gaa act aca ggc agc agg tcc gga	16912
Pro Arg Arg Val Ser Val Gly Ser Glu Thr Thr Gly Ser Arg Ser Gly	
935 940 945	
cgc gaa cac gcc cct tcc ccg tca aat tcg gat gat tcg gac tca aat	16960
Arg Glu His Ala Pro Ser Pro Ser Asn Ser Asp Asp Ser Asp Ser Asn	
950 955 960	
gat ggt ggg tcg acg aaa caa aat atc caa ccg gga tat cga tcc atc	17008
Asp Gly Gly Ser Thr Lys Gln Asn Ile Gln Pro Gly Tyr Arg Ser Ile	
965 970 975	
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Ser Gly Pro Asp Pro Arg Ile Arg Lys Thr Lys Arg Leu Ala Gly Glu	
980 985 990 995	
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Pro Gly Arg Gln Arg Gln Lys Ser Phe Ser Leu Pro Arg Ser Arg	
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acc ccg ata att ccc ccg gtg tcg ggg ccg ctc atg atg ccc gac	17146
Thr Pro Ile Ile Pro Pro Val Ser Gly Pro Leu Met Met Pro Asp	
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Gly Ser Pro Trp Pro Gly Ser Ala Pro Leu Pro Ser Asn Arg Val	
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cgg ttt gga ccg tcc ggg gag acc aga gag ggt cac tgg gag gat	17236
Arg Phe Gly Pro Ser Gly Glu Thr Arg Glu Gly His Trp Glu Asp	
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Glu Ala Val Arg Ala Ala Arg Ala Arg Tyr Glu Ala Ser Thr Glu	
1060 1065 1070	
ccc gtg ccg ctt tac gtg ccg gag ttg gga gat ccg gct aga cag	17326
Pro Val Pro Leu Tyr Val Pro Glu Leu Gly Asp Pro Ala Arg Gln	
1075 1080 1085	
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Tyr Arg Ala Leu Ile Asn Leu Ile Tyr Cys Pro Asp Arg Asp Pro	
1090 1095 1100	
ata gca tgg ctc cag aac ccc aag ctg acc ggt gtc aac tcg gcc	17416
Ile Ala Trp Leu Gln Asn Pro Lys Leu Thr Gly Val Asn Ser Ala	
1105 1110 1115	
ctg aac cag ttc tac caa aag ctg ttg cca ccg gga cgg gcg ggt	17461
Leu Asn Gln Phe Tyr Gln Lys Leu Leu Pro Pro Gly Arg Ala Gly	
1120 1125 1130	



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Thr Ala Val Thr Gly	Ser Val Ala Ser Pro	Val Pro His Val Gly	
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gaa gcc atg gcc acg	ggg gag gcc ctc tgg	gct ctc ccc cac gcg	17551
Glu Ala Met Ala Thr	Gly Glu Ala Leu Trp	Ala Leu Pro His Ala	
1150	1155	1160	
gcc gcg gcc gtg gct	atg agc cgt cga tac	gac cgg gcc caa aaa	17596
Ala Ala Ala Val Ala	Met Ser Arg Arg Tyr	Asp Arg Ala Gln Lys	
1165	1170	1175	
cac ttt atc cta cag	agt ctc cgc aga gcc	ttt gcc agc atg gca	17641
His Phe Ile Leu Gln	Ser Leu Arg Arg Ala	Phe Ala Ser Met Ala	
1180	1185	1190	
tac ccc gag gca acg	ggc tcc agt ccg gcg	gcg cgg atc tcc cgc	17686
Tyr Pro Glu Ala Thr	Gly Ser Ser Pro Ala	Ala Ala Arg Ile Ser Arg	
1195	1200	1205	
ggc cac cct tct cca	aca acc ccg gcc aca	cag gct ccc gac cct	17731
Gly His Pro Ser Pro	Thr Thr Pro Ala Thr	Gln Ala Pro Asp Pro	
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Gln Pro Ser Ala Ala	Ala Arg Ser Leu Ser	Val Cys Pro Pro Asp	
1225	1230	1235	
gat cgt tta cga act	ccg cgc aag cgc aag	tcc cag cca gtc gag	17821
Asp Arg Leu Arg Thr	Pro Arg Lys Arg Lys	Ser Gln Pro Val Glu	
1240	1245	1250	
agc aga agc ctc ctc	gac aag att agg gag	aca ccc gtc gcg gac	17866
Ser Arg Ser Leu Leu	Asp Lys Ile Arg Glu	Thr Pro Val Ala Asp	
1255	1260	1265	
gcc ccg gtt gca gac	gat cat gtg gtt tcc	aag gcc aag agg ccg	17911
Ala Arg Val Ala Asp	Asp His Val Val Ser	Lys Ala Lys Arg Arg	
1270	1275	1280	
gta tcc gag ccc gtg	acc atc acc tcg ggc	cct gtg gtg gat ccc	17956
Val Ser Glu Pro Val	Thr Ile Thr Ser Gly	Pro Val Val Asp Pro	
1285	1290	1295	
ccc gcc gta ata acg	atg cca ctt gac gga	ccg gcc cca aac ggg	18001
Pro Ala Val Ile Thr	Met Pro Leu Asp Gly	Pro Ala Pro Asn Gly	
1300	1305	1310	
gga ttt ccg cgt att	ccc ccg ggg gcc ctg	cat acc ccg gtc ccg	18046
Gly Phe Arg Arg Ile	Pro Arg Gly Ala Leu	His Thr Pro Val Pro	
1315	1320	1325	
tcg gac cag gct cgc	aag gcg tac tgt acc	ccc gaa acc atc gcc	18091
Ser Asp Gln Ala Arg	Lys Ala Tyr Cys Thr	Pro Glu Thr Ile Ala	
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cgt ctg gtc gac gac	cca ttg ttt ccc acg	gcc tgg cgc cct gcg	18136
Arg Leu Val Asp Asp	Pro Leu Phe Pro Thr	Ala Trp Arg Pro Ala	
1345	1350	1355	



cta agc ttt gat ccc ggc gcc ttg gcg gaa atc gcc gct cgg cgt	18181
Leu Ser Phe Asp Pro Gly Ala Leu Ala Glu Ile Ala Ala Arg Arg	
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ccg ggc gga gga gac cga cgg ttt ggt cca ccc agc gga gtg gag	18226
Pro Gly Gly Gly Asp Arg Arg Phe Gly Pro Pro Ser Gly Val Glu	
1375 1380 1385	
gcg ctg cga cgg agg tgc gcc tgg atg cgg cag atc cca gac ccg	18271
Ala Leu Arg Arg Arg Cys Ala Trp Met Arg Gln Ile Pro Asp Pro	
1390 1395 1400	
gag gat gtg agg ctt ctg atc atc tac gat ccg ttg ccc gga gag	18316
Glu Asp Val Arg Leu Leu Ile Ile Tyr Asp Pro Leu Pro Gly Glu	
1405 1410 1415	
gac atc aac ggc ccc ctc gag agc acc ctc gcg aca gat ccg gga	18361
Asp Ile Asn Gly Pro Leu Glu Ser Thr Leu Ala Thr Asp Pro Gly	
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ccg tca tgg agt cca tcc cga ggg gga ctg tct gtg gtc ctg gca	18406
Pro Ser Trp Ser Pro Ser Arg Gly Gly Leu Ser Val Val Leu Ala	
1435 1440 1445	
gcc ctg agt aac cgg ttg tgc ctg ccg agc act cat gcc tgg gcc	18451
Ala Leu Ser Asn Arg Leu Cys Leu Pro Ser Thr His Ala Trp Ala	
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ggg aac tgg acc ggc ccg ccg gac gtg tcc gct ttg aac gcc cgg	18496
Gly Asn Trp Thr Gly Pro Pro Asp Val Ser Ala Leu Asn Ala Arg	
1465 1470 1475	
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Gly Val Leu Leu Leu Ser Thr Arg Asp Leu Ala Phe Ala Gly Ala	
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Val Glu Tyr Leu Gly Ser Arg Leu Ala Ser Ala Arg Arg Arg Leu	
1495 1500 1505	
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Leu Val Leu Asp Ala Val Ala Leu Glu Arg Trp Pro Arg Asp Gly	
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Pro Ala Leu Ser Gln Tyr His Val Tyr Val Arg Ala Pro Ala Arg	
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Pro Asp Ala Gln Ala Val Val Arg Trp Pro Asp Ser Ala Val Thr	
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Glu Gly Leu Ala Arg Ala Val Phe Ala Ser Ser Arg Thr Phe Gly	
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Pro Ala Ser Phe Ala Arg Ile Glu Thr Ala Phe Ala Asn Leu Tyr	
1570 1575 1580	



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Pro Gly Glu Gln Pro	Leu Cys Leu Cys Arg	Gly Gly Asn Val Ala	
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Tyr Thr Val Cys Thr	Arg Ala Gly Pro Lys	Thr Arg Val Pro Leu	
1600	1605	1610	
tcg ccc cgt gaa tac	cgg cag tac gtg ctg	ccg ggt ttt gac ggt	18946
Ser Pro Arg Glu Tyr	Arg Gln Tyr Val Leu	Pro Gly Phe Asp Gly	
1615	1620	1625	
tgc aag gac ctc gcg	cga cag tct cgg ggt	ctg ggg ctc ggg gca	18991
Cys Lys Asp Leu Ala	Arg Gln Ser Arg Gly	Leu Gly Leu Gly Ala	
1630	1635	1640	
gcc gac ttt gtg gac	gag gcg gca cat agc	cac cgc gca gca aac	19036
Ala Asp Phe Val Asp	Glu Ala Ala His Ser	His Arg Ala Ala Asn	
1645	1650	1655	
cga tgg ggc ctg ggt	gcc gcg ctt cga ccc	gtc ttc ctt ccc gag	19081
Arg Trp Gly Leu Gly	Ala Ala Leu Arg Pro	Val Phe Leu Pro Glu	
1660	1665	1670	
gga cgg aga ccg ggg	gcc gcc ggg ccg gag	gcc ggc gac gta ccc	19126
Gly Arg Arg Pro Gly	Ala Ala Gly Pro Glu	Ala Gly Asp Val Pro	
1675	1680	1685	
acc tgg gcg agg gtg	ttt tgc cgc cac gcc	ctg ctg gaa ccc gac	19171
Thr Trp Ala Arg Val	Phe Cys Arg His Ala	Leu Leu Glu Pro Asp	
1690	1695	1700	
cct gcc gca gaa cca	ctc gtg ctt cca ccc	gtg gcc ggt cgg tcg	19216
Pro Ala Ala Glu Pro	Leu Val Leu Pro Pro	Val Ala Gly Arg Ser	
1705	1710	1715	
gtg gcg ctg tat gcg	tcg gcg gac gag gct	cgg aat gcc ctc ccc	19261
Val Ala Leu Tyr Ala	Ser Ala Asp Glu Ala	Arg Asn Ala Leu Pro	
1720	1725	1730	
ccg att ccc aga gta	atg tgg ccg ccc ggt	ttt ggg gcc gcg gag	19306
Pro Ile Pro Arg Val	Met Trp Pro Pro Gly	Phe Gly Ala Ala Glu	
1735	1740	1745	
acg gtg ttg gag ggg	agc gac gga aca cgg	ttc gtg ttc gga cac	19351
Thr Val Leu Glu Gly	Ser Asp Gly Thr Arg	Phe Val Phe Gly His	
1750	1755	1760	
cac ggg ggc tcg gaa	cgg ccg tca gaa acc	cag gcg ggg cga cag	19396
His Gly Gly Ser Glu	Arg Pro Ser Glu Thr	Gln Ala Gly Arg Gln	
1765	1770	1775	
cgg cgc acc gca gac	gac aga gaa cac gct	ttg gag ctg gac gat	19441
Arg Arg Thr Ala Asp	Asp Arg Glu His Ala	Leu Glu Leu Asp Asp	
1780	1785	1790	
tgg gag gtg ggg tgt	gaa gac gcg tgg gac	agc gag gag ggg ggc	19486
Trp Glu Val Gly Cys	Glu Asp Ala Trp Asp	Ser Glu Glu Gly Gly	
1795	1800	1805	



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Gly Asp Asp Gly Asp Ala Pro Gly Ser Ser Phe Gly Val Ser Ile	
1810 1815 1820	
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Val Ser Val Ala Pro Gly Val Leu Arg Asp Arg Arg Val Gly Leu	
1825 1830 1835	
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Arg Pro Ala Val Lys Val Glu Leu Leu Ser Ser Ser Ser Ser Ser	
1840 1845 1850	
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Glu Asp Glu Asp Asp Val Trp Gly Gly Arg Gly Gly Arg Ser Pro	
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Pro Gln Ser Arg Gly	
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Gly Thr Ser Asp Ala Ser Asp Asn Thr Cys Thr Ile Cys Met Ser	
1880 1885 1890	
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Thr Val Ser Asp Leu Gly Lys Thr Met Pro Cys Leu His Asp Phe	
1895 1900 1905	
tgc ttt gtt tgt att cgg gca tgg acc tcc acc agc gtc cag tgt	20561
Cys Phe Val Cys Ile Arg Ala Trp Thr Ser Thr Ser Val Gln Cys	
1910 1915 1920	
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Pro Leu Cys Arg Cys Pro Val Gln Ser Ile Leu His Lys Ile Val	



1925		1930		1935											
agt Ser 1940	gat Asp 1940	aca Thr 1940	agt Ser 1940	tac Tyr 1940	aag Lys 1945	gaa Glu 1945	tat Tyr 1945	gaa Glu 1945	gtg Val 1945	cac His 1950	cca Pro 1950	tcc Ser 1950	gac Asp 1950	gac Asp 1950	20651
gat Asp 1955	ggg Gly 1955	ttt Phe 1955	tct Ser 1955	gag Glu 1955	ccg Pro 1960	tca Ser 1960	ttt Phe 1960	gaa Glu 1960	gat Asp 1960	tcc Ser 1965	atc Ile 1965	gac Asp 1965	atc Ile 1965	cta Leu 1965	20696
ccg Pro 1970	gga Gly 1970	gat Asp 1970	gtc Val 1970	ata Ile 1970	gat Asp 1975	ctt Leu 1975	ctg Leu 1975	cca Pro 1975	cca Pro 1975	agc Ser 1980	cca Pro 1980	gga Gly 1980	ccg Pro 1980	agt Ser 1980	20741
cgg Arg 1985	gag Glu 1985	tcc Ser 1985	atc Ile 1985	caa Gln 1985	cag Gln 1990	cca Pro 1990	aca Thr 1990	tca Ser 1990	aga Arg 1990	tcg Ser 1995	agt Ser 1995	cgg Arg 1995	gag Glu 1995	ccc Pro 1995	20786
att Ile 2000	caa Gln 2000	tca Ser 2000	cca Pro 2000	aac Asn 2000	cct Pro 2005	ggg Gly 2005	ccc Pro 2005	ctt Leu 2005	caa Gln 2005	tcg Ser 2010	tcg Ser 2010	gct Ala 2010	aga Arg 2010	gag Glu 2010	20831
ccc Pro 2015	aca Thr 2015	gca Ala 2015	gag Glu 2015	tca Ser 2015	cca Pro 2020	agt Ser 2020	gac Asp 2020	tct Ser 2020	caa Gln 2020	cag Gln 2025	gat Asp 2025	tct Ser 2025	ata Ile 2025	caa Gln 2025	20876
cca Pro 2030	ccg Pro 2030	acc Thr 2030	cga Arg 2030	gac Asp 2030	tcg Ser 2035	agc Ser 2035	cct Pro 2035	ggg Gly 2035	gta Val 2035	acc Thr 2040	aaa Lys 2040	aca Thr 2040	tgc Cys 2040	tct Ser 2040	20921
acc Thr 2045	gca Ala 2045	tca Ser 2045	ttt Phe 2045	tta Leu 2045	cgg Arg 2050	aag Lys 2050	gta Val 2050	ttt Phe 2050	ttt Phe 2050	aaa Lys 2055	gac Asp 2055	caa Gln 2055	cct Pro 2055	gct Ala 2055	20966
gtt Val 2060	cga Arg 2060	tcg Ser 2060	gcg Ala 2060	acc Thr 2060	ccg Pro 2065	gtg Val 2065	gtg Val 2065	tat Tyr 2065	ggc Gly 2065	tcg Ser 2070	att Ile 2070	gaa Glu 2070	tct Ser 2070	gca Ala 2070	21011
cag Gln 2075	caa Gln 2075	ccc Pro 2075	cgg Arg 2075	acc Thr 2075	ggg Gly 2080	ggg Gly 2080	cag Gln 2080	gac Asp 2080	tac Tyr 2080	cgt Arg 2085	gat Asp 2085	cgt Arg 2085	cca Pro 2085	gta Val 2085	21056
tct Ser 2090	gtg Val 2090	gga Gly 2090	att Ile 2090	aat Asn 2090	caa Gln 2095	gac Asp 2095	cca Pro 2095	cga Arg 2095	acc Thr 2095	atg Met 2100	gac Asp 2100	aga Arg 2100	ctg Leu 2100	cct Pro 2100	21101
ttt Phe 2105	cga Arg 2105	gcc Ala 2105	acg Thr 2105	gat Asp 2105	aga Arg 2110	gga Gly 2110	aca Thr 2110	gag Glu 2110	gga Gly 2110	aac Asn 2115	gcg Ala 2115	aga Arg 2115	ttc Phe 2115	ccg Pro 2115	21146
tgt Cys 2120	tac Tyr 2120	atg Met 2120	caa Gln 2120	cct Pro 2120	tta Leu 2125	ctc Leu 2125	gga Gly 2125	tgg Trp 2125	ctt Leu 2125	gat Asp 2130	gat Asp 2130	caa Gln 2130	ctt Leu 2130	gcg Ala 2130	21191
gaa Glu 2135	ctg Leu 2135	tat Tyr 2135	caa Gln 2135	ccc Pro 2135	gaa Glu 2140	att Ile 2140	gta Val 2140	gag Glu 2140	cct Pro 2140	aca Thr 2145	aaa Lys 2145	atg Met 2145	ttg Leu 2145	ata Ile 2145	21236
tta Leu 2181	aac Asn 2181	tat Tyr 2181	ata Ile 2181	ggg Gly 2181	att Ile 2181	tac Tyr 2181	ggg Gly 2181	cgt Arg 2181	gat Asp 2181	gag Glu 2181	gcg Ala 2181	gga Gly 2181	tta Leu 2181	aaa Lys 2181	21281



2150		2155		2160	
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Thr Ser Leu Arg Cys Leu Leu His Asp Ser Thr Gly Pro Phe Val					
2165		2170		2175	
aca aac atg tta ttc ttg ttg gat cga tgt acc gat cca acc cgc	21371				
Thr Asn Met Leu Phe Leu Leu Asp Arg Cys Thr Asp Pro Thr Arg					
2180		2185		2190	
cta acc atg caa acc tgg acc tgg aaa gat aca gcc atc caa cta	21416				
Leu Thr Met Gln Thr Trp Thr Trp Lys Asp Thr Ala Ile Gln Leu					
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Ile Thr Gly Pro Ile Val Arg Pro Glu Thr Thr Ser Thr Gly Glu					
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Thr Ser Arg Gly Asp Glu Arg Asp Thr Arg Leu Val Asn Thr Pro					
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Gln Lys Val Arg Leu Phe Ser Val Leu Pro Gly Ile Lys Pro Gly					
2240		2245		2250	
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Ser Ala Arg Gly Ala Lys Arg Arg Leu Phe His Thr Gly Arg Asp					
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Val Lys Arg Cys Leu Thr Ile Asp Leu Thr Ser Glu Ser Asp Ser					
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Glu Ser Asn Thr Pro Ser Thr Ser Gly Ser Thr Ser Gly Ser Leu					
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Lys His Leu Thr Lys Lys Ser Ser Ala Gly Lys Ala Gly Lys Gly					
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Tyr Thr Gly Lys	Trp Ser Asp Cys Arg	Lys His Gly Lys Ser Val	
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2880			2885		2890	31574
gca tct	cca tcg	ctg ttt	gta caa	ttg tct	gta tat	ctt aga cgc
Ala Ser	Pro Ser	Leu Phe	Val Gln	Leu Ser	Val Tyr	Leu Arg Arg
2895			2900		2905	31619
gtt gag	tgt caa	ata gga	cct ttg	gaa aaa	atg cgt	cgg ttt tta
Val Glu	Cys Gln	Ile Gly	Pro Leu	Glu Lys	Met Arg	Arg Phe Leu



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Tyr Glu Gly Val Leu Trp Leu Leu Asn Thr Leu Met Tyr Val Val			
2925	2930	2935	
gat aac aac ccc ttt aca aaa acc cgc gta ttg ccg cat tat atg			31754
Asp Asn Asn Pro Phe Thr Lys Thr Arg Val Leu Pro His Tyr Met			
2940	2945	2950	
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Phe Val Lys Leu Leu Asn Pro Gln Pro Gly Thr Ala Pro Asn Ile			
2955	2960	2965	
ata aag gct ata tat tca tgt ggg gtg ggt cag cgt ttt gac ctg			31844
Ile Lys Ala Ile Tyr Ser Cys Gly Val Gly Gln Arg Phe Asp Leu			
2970	2975	2980	
ccc cac gga acc ccc ccc tgt cca gat ggt gtg gtg caa gta ccc			31889
Pro His Gly Thr Pro Pro Cys Pro Asp Gly Val Val Gln Val Pro			
2985	2990	2995	
ccg gga ttg tta aat gga cct tta cga gat tcg gaa tat cag aag			31934
Pro Gly Leu Leu Asn Gly Pro Leu Arg Asp Ser Glu Tyr Gln Lys			
3000	3005	3010	
agc gta tat ttt tgg tgg tta aat cgc acc atg gta aca ccg aaa			31979
Ser Val Tyr Phe Trp Trp Leu Asn Arg Thr Met Val Thr Pro Lys			
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Asn Val Gln Leu Phe Glu Thr Tyr Lys Asn Ser Pro Arg Val Val			
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gac gta aaa gca	gat gat gtg ccg att	tcg ggt gaa ccg tat	tct	55302
Asp Val Lys Ala	Asp Asp Val Pro Ile	Ser Gly Glu Pro Tyr	Ser	
3270	3275	3280		
gag aaa cag cct	aga cgg cgt aag aag	tcc gat cat att aca	cta	55347
Glu Lys Gln Pro	Arg Arg Arg Lys Lys	Ser Asp His Ile Thr	Leu	
3285	3290	3295		
agt aac ttt gta	cag att agg acc atc	ccc cgg gta atg gac	att	55392
Ser Asn Phe Val	Gln Ile Arg Thr Ile	Pro Arg Val Met Asp	Ile	
3300	3305	3310		
tgg gat cct cgc	cat aaa gcc act act	cat tgt atc cgc gcg	tta	55437
Trp Asp Pro Arg	His Lys Ala Thr Thr	His Cys Ile Arg Ala	Leu	
3315	3320	3325		
tca tgt gcg gtt	ttt ttt gcg gac gag	gtt ata ttt aaa gcc	aga	55482
Ser Cys Ala Val	Phe Phe Ala Asp Glu	Val Ile Phe Lys Ala	Arg	
3330	3335	3340		
aaa tgg cct gga	ctt gaa gat gaa ctt	aat gaa gcc cgt gag	acg	55527
Lys Trp Pro Gly	Leu Glu Asp Glu Leu	Asn Glu Ala Arg Glu	Thr	
3345	3350	3355		
ata tat act gca	gtt gtt gcg gta tat	ggc gaa ccg ggg gaa	ctt	55572
Ile Tyr Thr Ala	Val Val Ala Val Tyr	Gly Glu Arg Gly Glu	Leu	
3360	3365	3370		
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Pro Phe Phe Gly	His Ala Tyr Gly Arg	Asp Leu Thr Ser Cys	Gln	
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cgg ttc gtg att	gtt caa tat ata ctg	tct cgg tgg gaa gcg	ttt	55662
Arg Phe Val Ile	Val Gln Tyr Ile Leu	Ser Arg Trp Glu Ala	Phe	
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aat tgt tat gcc	gtt att gaa gat tta	acg cgt agt tat gtt	aac	55707
Asn Cys Tyr Ala	Val Ile Glu Asp Leu	Thr Arg Ser Tyr Val	Asn	
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gcg tta ccc agt	gat gat gac acg gat	caa gtt gct caa gat	tta	55752
Ala Leu Pro Ser	Asp Asp Asp Thr Asp	Gln Val Ala Gln Asp	Leu	
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ata cgg acc att	gtg gat aca gca aac	agc ctc ttg agg gaa	gtg	55797
Ile Arg Thr Ile	Val Asp Thr Ala Asn	Ser Leu Leu Arg Glu	Val	
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ggc ttt att ggc	acg ttg gct gaa act	ttg ttg ttc tta cca	ctc	55842
Gly Phe Ile Gly	Thr Leu Ala Glu Thr	Leu Leu Phe Leu Pro	Leu	
3450	3455	3460		



ccc cag ctt ccc	tgt tac aag gaa acg	tca cat ctt gca aaa aag	55887
Pro Gln Leu Pro	Cys Tyr Lys Glu Thr	Ser His Leu Ala Lys Lys	
3465	3470	3475	
gaa ggt gtg cga	att tta cgc ctt gca	aaa aca gga gtt ggt tta	55932
Glu Gly Val Arg	Ile Leu Arg Leu Ala	Lys Thr Gly Val Gly Leu	
3480	3485	3490	
tcg gat act gtt	ccg gtt gat gtt tct	gtc acg gaa agg cat gag	55977
Ser Asp Thr Val	Pro Val Asp Val Ser	Val Thr Glu Arg His Glu	
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tat gag ata tcc	cgg tac tta gat acc	ctg tac tct gga gac ccc	56022
Tyr Glu Ile Ser	Arg Tyr Leu Asp Thr	Leu Tyr Ser Gly Asp Pro	
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tgc tat aac ggc	gct gtg cgt cta tgc	cgt tta ttg gga tca tca	56067
Cys Tyr Asn Gly	Ala Val Arg Leu Cys	Arg Leu Leu Gly Ser Ser	
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Ile Pro Ile Ala	Leu Tyr Tyr Asn Thr	Ile Ser Gly Asn Ala Phe	
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gaa ccg tat ttt	gct ggg agg cgt tat	ata gca tat tta ggc gct	56157
Glu Pro Tyr Phe	Ala Gly Arg Arg Tyr	Ile Ala Tyr Leu Gly Ala	
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Leu Phe Phe Gly	Arg Val His Gln Thr	Pro Phe Gly Asp Gly Lys	
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Lys Thr Gln Arg			
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Arg Ala Lys Cys Phe Arg Leu Gly Gln Arg Cys His Thr Arg Phe	
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Tyr Asp Val Leu Lys Lys Asp Ile Asp Asn Val Arg Arg Gly Phe	
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Ala Asp Ala Phe Asn Pro Arg Leu Ala Lys Leu Leu Ser Pro Leu	
	3625 3630 3635



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Ser His Val Asp Val Gln Arg Ala Val Arg Ile Ser Met Ser Phe	
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Glu Val Asn Leu Gly Arg Arg Arg Pro Asp Cys Val Cys Ile Ile	
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Gln Thr Glu Ser Ser Gly Ala Gly Lys Thr Val Cys Phe Ile Val	
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Glu Leu Lys Ser Cys Arg Phe Ser Ala Asn Ile His Thr Pro Thr	
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Met	



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Cys	Leu	Asp	Ala	His	Thr	Gln	Leu	Ser	Arg	Gly	Ser	Leu	Gly	Arg		
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Ile	Pro	Gln	Phe	Ala	Ser	Thr	Pro									
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ttctttgata tctgttggag tttcttcgta aattccagtg ttgaatataa cttctgcgtg	73044
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cataaatacg gcttccttaa acaatgccgt gaccaccaag tataatattg tattttcttg	73584
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caggggtcaaa tgaccacca aaaccagtc tgtcgatata ttaagaagag aggcttttaa	74124
acgggtatta catatgcgga aaccacaaca aatcacgtga ttacacttta tgtattagaa	74184
gggcgtgggg ttgtgttact cagtaacact ggctttttac aagattatca atcgttaaca	74244
taaa atg gcg atc aga acg ggg ttt tgt aat ccc ttt tta acc caa	74290
Met Ala Ile Arg Thr Gly Phe Cys Asn Pro Phe Leu Thr Gln	
5030 5035 5040	
gca tca ggg att aaa tat aac cca aga acc ggg cgc ggt agt aac	74335
Ala Ser Gly Ile Lys Tyr Asn Pro Arg Thr Gly Arg Gly Ser Asn	
5045 5050 5055	
aga gaa ttt ctt cat agt tac aaa act acc atg tca tcg ttt caa	74380
Arg Glu Phe Leu His Ser Tyr Lys Thr Thr Met Ser Ser Phe Gln	
5060 5065 5070	
ttt ttg gcc cct aaa tgt tta gat gaa gat gtg ccc atg gaa gaa	74425
Phe Leu Ala Pro Lys Cys Leu Asp Glu Asp Val Pro Met Glu Glu	
5075 5080 5085	
cga aag ggg gtt cac gtc ggt aca ctt agt cga ccg cct aaa gtt	74470
Arg Lys Gly Val His Val Gly Thr Leu Ser Arg Pro Pro Lys Val	



5090				5095				5100							
tac	tgt	aat	gga	aaa	gaa	gtt	ccg	att	ctg	gat	ttt	cgt	tgt	tcc	74515
Tyr	Cys	Asn	Gly	Lys	Glu	Val	Pro	Ile	Leu	Asp	Phe	Arg	Cys	Ser	
			5105											5115	
agc	ccc	tgg	cct	aga	cgc	gtg	aat	att	tgg	ggg	gaa	atc	gac	ttt	74560
Ser	Pro	Trp	Pro	Arg	Arg	Val	Asn	Ile	Trp	Gly	Glu	Ile	Asp	Phe	
			5120											5130	
cgt	ggg	gat	aag	ttt	gac	ccc	cgc	ttt	aac	aca	ttc	cat	gta	tat	74605
Arg	Gly	Asp	Lys	Phe	Asp	Pro	Arg	Phe	Asn	Thr	Phe	His	Val	Tyr	
			5135											5145	
gat	att	gtc	gaa	aca	aca	gaa	gcc	gcg	tct	aat	gga	gat	gta	tcc	74650
Asp	Ile	Val	Glu	Thr	Thr	Glu	Ala	Ala	Ser	Asn	Gly	Asp	Val	Ser	
			5150											5160	
cgg	ttt	gca	act	gca	aca	cga	ccg	ctt	ggg	acc	gtt	att	act	tta	74695
Arg	Phe	Ala	Thr	Ala	Thr	Arg	Pro	Leu	Gly	Thr	Val	Ile	Thr	Leu	
			5165											5175	
ctt	ggc	atg	tcc	cga	tgt	gga	aaa	agg	gtg	gca	gtt	cat	gta	tac	74740
Leu	Gly	Met	Ser	Arg	Cys	Gly	Lys	Arg	Val	Ala	Val	His	Val	Tyr	
			5180											5190	
ggc	atc	tgt	caa	tat	ttt	tat	ata	aac	aaa	gcc	gag	gtg	gat	acc	74785
Gly	Ile	Cys	Gln	Tyr	Phe	Tyr	Ile	Asn	Lys	Ala	Glu	Val	Asp	Thr	
			5195											5205	
gct	tgt	ggc	ata	cgt	tcc	ggg	agc	gag	tta	tct	gta	tta	ctt	gcc	74830
Ala	Cys	Gly	Ile	Arg	Ser	Gly	Ser	Glu	Leu	Ser	Val	Leu	Leu	Ala	
			5210											5220	
gag	tgt	tta	cgc	agt	tct	atg	ata	aca	caa	aat	gat	gca	acg	tta	74875
Glu	Cys	Leu	Arg	Ser	Ser	Met	Ile	Thr	Gln	Asn	Asp	Ala	Thr	Leu	
			5225											5235	
aat	gga	gac	aag	aac	gct	ttt	cat	ggg	acc	tcg	ttt	aaa	agc	gca	74920
Asn	Gly	Asp	Lys	Asn	Ala	Phe	His	Gly	Thr	Ser	Phe	Lys	Ser	Ala	
			5240											5250	
tct	cca	gaa	agc	ttt	cgc	gtt	gag	gtt	att	gag	cgc	aca	gat	gtt	74965
Ser	Pro	Glu	Ser	Phe	Arg	Val	Glu	Val	Ile	Glu	Arg	Thr	Asp	Val	
			5255											5265	
tat	tac	tac	gat	aca	cag	cca	tgt	gcg	ttt	tac	agg	gtg	tat	tct	75010
Tyr	Tyr	Tyr	Asp	Thr	Gln	Pro	Cys	Ala	Phe	Tyr	Arg	Val	Tyr	Ser	
			5270											5280	
ccc	tca	tct	aaa	ttt	aca	aat	tat	ctt	tgt	gat	aac	ttt	cac	ccg	75055
Pro	Ser	Ser	Lys	Phe	Thr	Asn	Tyr	Leu	Cys	Asp	Asn	Phe	His	Pro	
			5285											5295	
gag	ttg	aaa	aag	tat	gaa	ggg	cgg	gta	gac	gct	acc	act	cgt	ttt	75100
Glu	Leu	Lys	Lys	Tyr	Glu	Gly	Arg	Val	Asp	Ala	Thr	Thr	Arg	Phe	
			5300											5310	
cta	atg	gat	aat	ccc	ggc	ttt	gtt	agt	ttt	ggg	tgg	tat	caa	cta	75145
Leu	Met	Asp	Asn	Pro	Gly	Phe	Val	Ser	Phe	Gly	Trp	Tyr	Gln	Leu	



5315				5320				5325				
aaa cct gga gtt	gat ggg gaa cgt	gtt cga gtt cga ccg	gca agt	75190								
Lys Pro Gly Val	Asp Gly Glu Arg	Val Arg Val Arg Pro	Ala Ser									
5330		5335	5340									
cgc caa tta acg	tta agc gac gtt	gaa att gac tgc atg	tcg gat	75235								
Arg Gln Leu Thr	Leu Ser Asp Val	Glu Ile Asp Cys Met	Ser Asp									
5345		5350	5355									
aat ctg cag gct	ata cca aac gat	gac tca tgg cct gac	tac aag	75280								
Asn Leu Gln Ala	Ile Pro Asn Asp	Asp Ser Trp Pro Asp	Tyr Lys									
5360		5365	5370									
ttg tta tgt ttc	gat att gaa tgt	aaa tca gga gga tct	aat gag	75325								
Leu Leu Cys Phe	Asp Ile Glu Cys	Lys Ser Gly Gly Ser	Asn Glu									
5375		5380	5385									
ctg gcg ttt ccc	gat gca aca cat	ctg gag gat ctt gta	atc caa	75370								
Leu Ala Phe Pro	Asp Ala Thr His	Leu Glu Asp Leu Val	Ile Gln									
5390		5395	5400									
att tct tgt cta	tta tat tca atc	cct cga cag tct tta	gaa cac	75415								
Ile Ser Cys Leu	Leu Tyr Ser Ile	Pro Arg Gln Ser Leu	Glu His									
5405		5410	5415									
att tta ctg ttt	tcc ctt ggc tct	tgt gac tta cca caa	agg tat	75460								
Ile Leu Leu Phe	Ser Leu Gly Ser	Cys Asp Leu Pro Gln	Arg Tyr									
5420		5425	5430									
gta caa gaa atg	aag gac gcg ggg	tta ccg gag ccg act	gtg ctg	75505								
Val Gln Glu Met	Lys Asp Ala Gly	Leu Pro Glu Pro Thr	Val Leu									
5435		5440	5445									
gag ttt gat agt	gaa ttc gag cta	tta att gca ttt atg	acc ctc	75550								
Glu Phe Asp Ser	Glu Phe Glu Leu	Leu Ile Ala Phe Met	Thr Leu									
5450		5455	5460									
gta aaa cag tac	gct ccc gag ttt	gcc aca ggt tat aac	att gtt	75595								
Val Lys Gln Tyr	Ala Pro Glu Phe	Ala Thr Gly Tyr Asn	Ile Val									
5465		5470	5475									
aat ttt gat tgg	gcg ttt att atg	gag aaa ctt aat tct	ata tac	75640								
Asn Phe Asp Trp	Ala Phe Ile Met	Glu Lys Leu Asn Ser	Ile Tyr									
5480		5485	5490									
agt ctc aag ctt	gat ggt tat ggc	agt ata aac cgt ggg	ggt ctg	75685								
Ser Leu Lys Leu	Asp Gly Tyr Gly	Ser Ile Asn Arg Gly	Gly Leu									
5495		5500	5505									
ttt aag ata tgg	gat gtt ggc aaa	tcc gga ttt cag cga	cga agc	75730								
Phe Lys Ile Trp	Asp Val Gly Lys	Ser Gly Phe Gln Arg	Arg Ser									
5510		5515	5520									
aag gta aag atc	aac ggt ctc ata	tct ctg gat atg tat	gca att	75775								
Lys Val Lys Ile	Asn Gly Leu Ile	Ser Leu Asp Met Tyr	Ala Ile									
5525		5530	5535									
gca act gaa aaa	tta aaa ctc tcg	agt tat aaa tta gat	tcg gtt	75820								
Ala Thr Glu Lys	Leu Lys Leu Ser	Ser Tyr Lys Leu Asp	Ser Val									



5540	5545	5550	
gca cgt gaa gct Ala Arg Glu Ala 5555	cta aat gag tcc Leu Asn Glu Ser 5560	aag aga gat ttg ccc Lys Arg Asp Leu Pro 5565	aaa tac Lys Tyr 75865
gac att ccg gga Asp Ile Pro Gly 5570	tat tac gct agt Tyr Tyr Ala Ser 5575	gga ccg aat aca cga Gly Pro Asn Thr Arg 5580	att Ile 75910
att ggt gaa tat Ile Gly Glu Tyr 5585	tgt ata caa gac Cys Ile Gln Asp 5590	tcg gct ctt gtg ggg Ser Ala Leu Val Gly 5595	aaa ctg Lys Leu 75955
ttt ttt aaa tat Phe Phe Lys Tyr 5600	tta cca cac ctt Leu Pro His Leu 5605	gag tta tcc gcg gtt Glu Leu Ser Ala Val 5610	agg Arg 76000
cta gct aga att Leu Ala Arg Ile 5615	act tta acc aag Thr Leu Thr Lys 5620	gct att tac gac gga Ala Ile Tyr Asp Gly 5625	cag cag Gln Gln 76045
gtt agg att tac Val Arg Ile Tyr 5630	acc tgt tta tta Thr Cys Leu Leu 5635	gga ctg gct tcg tct Gly Leu Ala Ser Ser 5640	cga gga Arg Gly 76090
ttt att tta ccc Phe Ile Leu Pro 5645	gat ggg gga tac Asp Gly Gly Tyr 5650	cca gct act ttt gaa Pro Ala Thr Phe Glu 5655	tat aag Tyr Lys 76135
gat gtt att ccc Asp Val Ile Pro 5660	gat gtc ggg gat Asp Val Gly Asp 5665	ggt gag gaa gag atg Val Glu Glu Glu Met 5670	gat gaa Asp Glu 76180
gac gag agc gtt Asp Glu Ser Val 5675	tct ccc act ggt Ser Pro Thr Gly 5680	acg tca agt ggg cga Thr Ser Ser Gly Arg 5685	aat gta Asn Val 76225
gga tat aaa gga Gly Tyr Lys Gly 5690	gcc agg gtt ttt Ala Arg Val Phe 5695	gac cct gat acg gga Asp Pro Asp Thr Gly 5700	ttt tat Phe Tyr 76270
atc gat ccg gtg Ile Asp Pro Val 5705	gtc gta ttg gat Val Val Leu Asp 5710	ttt gca agt tta tat Phe Ala Ser Leu Tyr 5715	cca agt Pro Ser 76315
ata att cag gcc Ile Ile Gln Ala 5720	cat aac tta tgt His Asn Leu Cys 5725	ttt acc acg cta acg Phe Thr Thr Leu Thr 5730	aat Asn 76360
ttt gag acg gtt Phe Glu Thr Val 5735	aaa cgt ttg aat Lys Arg Leu Asn 5740	cca tcc gat tat gcc Pro Ser Asp Tyr Ala 5745	acc ttt Thr Phe 76405
aca gtt gga gga Thr Val Gly Gly 5750	aaa cgt ctt ttt Lys Arg Leu Phe 5755	ttt gtg cgc tct aac Phe Val Arg Ser Asn 5760	gta cga Val Arg 76450
gaa agt ctg ctg Glu Ser Leu Leu	ggt gtt ctt tta Gly Val Leu Leu	aaa gac tgg ttg gct Lys Asp Trp Leu Ala Met	cgc Arg 76495



5765				5770				5775				
aag gct att aga	gcg cgc ata ccc	gga agt tct tca gat	gaa gca	76540								
Lys Ala Ile Arg	Ala Arg Ile Pro	Gly Ser Ser Ser Asp	Glu Ala									
5780		5785	5790									
gtg tta tta gac	aaa caa caa gcc	gcg ata aaa gta gtt	tgt aat	76585								
Val Leu Leu Asp	Lys Gln Gln Ala	Ala Ile Lys Val Val	Cys Asn									
5795		5800	5805									
tcc gtg tac ggt	ttt act gga gtt	gcg cag gga ttt	ctg cca tgt	76630								
Ser Val Tyr Gly	Phe Thr Gly Val	Ala Gln Gly Phe	Leu Pro Cys									
5810		5815	5820									
tta tac gta gcg	gcc act gtc act	aca att ggc cgt	caa atg tta	76675								
Leu Tyr Val Ala	Ala Thr Val Thr	Thr Ile Gly Arg	Gln Met Leu									
5825		5830	5835									
tta agt acc aga	gat tat att cat	aat aac tgg gcc	gca ttt gaa	76720								
Leu Ser Thr Arg	Asp Tyr Ile His	Asn Asn Trp Ala	Ala Phe Glu									
5840		5845	5850									
cgt ttt att aca	gcg ttt cca gac	att gaa agt agc	gtt ctc tcc	76765								
Arg Phe Ile Thr	Ala Phe Pro Asp	Ile Glu Ser Ser	Val Leu Ser									
5855		5860	5865									
caa aaa gcg tac	gag gta aag gtt	ata tat gga gat	acg gat tct	76810								
Gln Lys Ala Tyr	Glu Val Lys Val	Ile Tyr Gly Asp	Thr Asp Ser									
5870		5875	5880									
gtg ttt atc cga	ttc aag ggt gtt	agt gtt gag ggg	ata gct aaa	76855								
Val Phe Ile Arg	Phe Lys Gly Val	Ser Val Glu Gly	Ile Ala Lys									
5885		5890	5895									
atc ggc gag aaa	atg gca cat ata	att tca acg gct	ctg ttt tgt	76900								
Ile Gly Glu Lys	Met Ala His Ile	Ile Ser Thr Ala	Leu Phe Cys									
5900		5905	5910									
cct cct ata aag	ttg gag tgt gaa	aaa act ttt ata	aaa ctt ttg	76945								
Pro Pro Ile Lys	Leu Glu Cys Glu	Lys Thr Phe Ile	Lys Leu Leu									
5915		5920	5925									
ctt ata aca aag	aaa aag tac att	ggg gta att tac	ggc gga aag	76990								
Leu Ile Thr Lys	Lys Lys Tyr Ile	Gly Val Ile Tyr	Gly Gly Lys									
5930		5935	5940									
gtt tta atg aag	gga gtc gac ttg	ggt aga aaa aac	aac tgt caa	77035								
Val Leu Met Lys	Gly Val Asp Leu	Val Arg Lys Asn	Asn Cys Gln									
5945		5950	5955									
ttt att aac gat	tat gcc cgc aaa	ctt gta gaa ctg	ttg tta tat	77080								
Phe Ile Asn Asp	Tyr Ala Arg Lys	Leu Val Glu Leu	Leu Leu Tyr									
5960		5965	5970									
gac gac acc gtc	tcg cgt gct gcg	gcg gag gcg tcg	tgt gtt tcc	77125								
Asp Asp Thr Val	Ser Arg Ala Ala	Ala Glu Ala Ser	Cys Val Ser									
5975		5980	5985									
att gct gaa tgg	aat aga cgg gcc	atg ccg tct ggg	atg gcc ggg	77170								
Ile Ala Glu Trp	Asn Arg Arg Ala	Met Pro Ser Gly	Met Ala Gly									



5990				5995				6000				
ttt gga cgc ata	att gca gat gca	cat cgc cag att aca	tca ccc	77215								
Phe Gly Arg Ile	Ile Ala Asp Ala	His Arg Gln Ile Thr	Ser Pro									
6005		6010	6015									
aaa ttg gat att	aat aag ttt gtt	atg acg gcc gag ctt	agt cgt	77260								
Lys Leu Asp Ile	Asn Lys Phe Val	Met Thr Ala Glu Leu	Ser Arg									
6020		6025	6030									
cca cca tcc gcc	tac ata aac cgt	cgc ttg gct cac tta	aca gta	77305								
Pro Pro Ser Ala	Tyr Ile Asn Arg	Arg Leu Ala His Leu	Thr Val									
6035		6040	6045									
tat tat aaa tta	gta atg aga cag	ggc caa atc cca aac	gtt cga	77350								
Tyr Tyr Lys Leu	Val Met Arg Gln	Gly Gln Ile Pro Asn	Val Arg									
6050		6055	6060									
gaa cgc atc cct	tat gtt att gtg	gcc ccc aca gac gaa	gtg gag	77395								
Glu Arg Ile Pro	Tyr Val Ile Val	Ala Pro Thr Asp Glu	Val Glu									
6065		6070	6075									
gct gat gca aaa	agt gta gct ttg	cta cgt gga gat cct	tta cag	77440								
Ala Asp Ala Lys	Ser Val Ala Leu	Leu Arg Gly Asp Pro	Leu Gln									
6080		6085	6090									
aat acc gca ggt	aaa cgg tgt ggg	gaa gca aag cgt aag	tta ata	77485								
Asn Thr Ala Gly	Lys Arg Cys Gly	Glu Ala Lys Arg Lys	Leu Ile									
6095		6100	6105									
ata tct gac tta	gcg gaa gat ccc	att cac gta aca tca	cac ggg	77530								
Ile Ser Asp Leu	Ala Glu Asp Pro	Ile His Val Thr Ser	His Gly									
6110		6115	6120									
ctg tct tta aac	att gac tat tat	ttt tct cat ctc att	ggg acg	77575								
Leu Ser Leu Asn	Ile Asp Tyr Tyr	Phe Ser His Leu Ile	Gly Thr									
6125		6130	6135									
gcg agt gta act	ttt aag gcg tta	ttt gga aac gac act	aaa ctc	77620								
Ala Ser Val Thr	Phe Lys Ala Leu	Phe Gly Asn Asp Thr	Lys Leu									
6140		6145	6150									
aca gaa cgg ctt	tta aaa cgt ttt	att cca gag aca cga	gtt gtt	77665								
Thr Glu Arg Leu	Leu Lys Arg Phe	Ile Pro Glu Thr Arg	Val Val									
6155		6160	6165									
aac gtt aaa atg	cta aac cgc ttg	cag gcg gca ggc ttt	gtt tgt	77710								
Asn Val Lys Met	Leu Asn Arg Leu	Gln Ala Ala Gly Phe	Val Cys									
6170		6175	6180									
ata cac gcc ccg	tgc tgg gat aat	aaa atg aac act gaa	gct gaa	77755								
Ile His Ala Pro	Cys Trp Asp Asn	Lys Met Asn Thr Glu	Ala Glu									
6185		6190	6195									
atc acc gag gag	gaa caa agt cat	caa ata atg cgt aga	gtc ttt	77800								
Ile Thr Glu Glu	Glu Gln Ser His	Gln Ile Met Arg Arg	Val Phe									
6200		6205	6210									
tgt att cca aaa	gca att ctc cat	caa agt taa gggtcacacat		77843								
Cys Ile Pro Lys	Ala Ile Leu His	Gln Ser										



6215

6220

tttacagtaa	acgtccgatg	ttccaatgga	tggcaccaca	gtctctgttt	gttggtcttg	77903
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ccgacacgcg	gcctgtatat	gatcgattag	tctgtaatgg	aggtgaacag	atttccccgg	78023
aaatataaca	tacatcataa	accctccggc	atctccatca	cgataaaaaa	gtacgcgtat	78083
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cggacaataa	cctccgagac	ctaaatgata	accatttccg	gataacgaca	ggcagttatc	78383
cgccactgtc	tgacccaagt	taaacggaag	ggtgacaggg	gtcgtcttaa	taattggcac	78443
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Gln Cys Cys Asp Gly Asp Leu Pro Ile Phe Asp Pro Gln Arg Pro			
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Pro Ala Arg Cys Val Phe Gln Phe Asn Gly Glu Asp Asn Val Ser			
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Glu Ala Phe Pro Val Glu Tyr Ile Met Arg Leu Met Ala Asn Trp			
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Ser Thr Leu Ser Thr Gly Ile Asn Leu Ser Ala Leu Glu Ser Ile			
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Lys Arg Gly Gly Gly Ile Asp Arg Arg Pro Leu Gln Ala Leu Met			
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Pro Val Ser	Phe Asn Leu Asn Asp	Leu Gln Leu Thr Ala	Arg Thr	
7825	7830	7835		
act gtt att	ttt tta aac ggg gtc	ctg gcg gct ggg aac	ttt cca	97503
Thr Val Ile	Phe Leu Asn Gly Val	Leu Ala Ala Gly Asn	Phe Pro	
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Cys Lys Lys	Ser Cys Lys Gly Val	Lys Asn Asn Arg Ser	Leu Gly	
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Ile Gly Ile	Gln Gly Leu His Thr	Thr Cys Leu Arg Leu	Gly Phe	
7870	7875	7880		
gat tta act	tcc caa cca gct aga	cgg tta aat gta caa	ata gcg	97638
Asp Leu Thr	Ser Gln Pro Ala Arg	Arg Leu Asn Val Gln	Ile Ala	
7885	7890	7895		
gag tta atg	ttg tat gag aca atg	aaa aca agc atg gaa	atg tgt	97683
Glu Leu Met	Leu Tyr Glu Thr Met	Lys Thr Ser Met Glu	Met Cys	
7900	7905	7910		
aag att ggc	ggc tta gcc ccg ttt	aag ggt ttt acc gaa	agt aaa	97728
Lys Ile Gly	Gly Leu Ala Pro Phe	Lys Gly Phe Thr Glu	Ser Lys	
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Tyr Ala Lys	Gly Trp Leu His Gln	Asp Gly Phe Ser Thr	Ile Ser	
7930	7935	7940		



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Tyr Leu Asp	Leu Pro Trp Cys Thr	Leu Arg Asp Asp Ile	Cys Ala	
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Tyr Gly Leu	Tyr Asn Ser Gln Phe	Leu Ala Leu Met Pro	Thr Val	
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Ser Ser Ala	Gln Val Thr Glu Cys	Ser Glu Gly Phe Ser	Pro Ile	
7975	7980	7985		
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Tyr Asn Asn	Met Phe Ser Lys Val	Thr Thr Ser Gly Glu	Leu Leu	
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Arg Pro Asn	Leu Asp Leu Met Asp	Glu Leu Arg Asp Met	Tyr Ser	
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Cys Glu Glu	Lys Arg Leu Glu Val	Ile Asn Ile Leu Glu	Lys Asn	
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Gln Trp Ser	Val Ile Arg Ser Phe	Gly Cys Leu Ser Asn	Ser His	
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Pro Leu Leu	Lys Tyr Lys Thr Ala	Phe Glu Tyr Glu Gln	Glu Asp	
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Leu Val Asp	Met Cys Ala Glu Arg	Ala Pro Phe Ile Asp	Gln Ser	
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Gln Ser Met	Thr Leu Phe Ile Glu	Glu Arg Pro Asp Gly	Thr Ile	
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Pro Ala Ser	Lys Ile Met Asn Leu	Leu Ile Arg Ala Tyr	Lys Ala	
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ggc ctt aaa	acg ggt atg tac tac	tgt aaa att cgt aaa	gct acg	98313
Gly Leu Lys	Thr Gly Met Tyr Tyr	Cys Lys Ile Arg Lys	Ala Thr	
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Asn Ser Gly	Leu Phe Ala Gly Gly	Glu Leu Thr Cys Thr	Ser Cys	
8125	8130	8135		
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Ala Leu		Met Asp Gln Lys Asp	Cys	
		8140	8145	
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Ser His Phe	Phe Tyr Arg Pro Glu	Cys Pro Asp Ile Asn	Asn Leu	
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Gln Lys Asp Ile His His Tyr Tyr Ile Glu Gln Glu Cys Ile Glu	
8225 8230 8235	
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8240 8245 8250	
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Arg Gly Asp Glu Ser Leu Arg Val Gln Tyr Val Asn Val Thr Ile	
8255 8260 8265	
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Asn Asn Pro Ser Ile Gln Gln Lys Val Gln Trp Leu Glu Glu Lys	
8270 8275 8280	
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Val Arg Asp Asn Pro Ser Val Ala Glu Lys Tyr Ile Leu Met Ile	
8285 8290 8295	
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Cys Ile Tyr Asn Asn Tyr Val Pro Glu Lys Pro Ala Ile Thr Arg	
8345 8350 8355	
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Leu Lys Ser His Ala Pro Lys Thr Arg Leu Val Asn Val Asp Ala	
8375 8380 8385	



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Ile Thr Gln Tyr Val	Lys Phe Ser Ala Asp	Arg Leu Leu Ser Ala	
8390	8395	8400	
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Ile Asn Val Pro Lys	Leu Phe Asn Thr Pro	Pro Pro Asp Ser Asp	
8405	8410	8415	
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Phe Pro Leu Ala Phe	Met Ile Ala Asp Lys	Asn Thr Asn Phe Phe	
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Glu Arg His Ser Thr	Ser Tyr Ala Gly Thr	Val Ile Asn Asp Leu	
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8465 8470 8475

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8495 8500 8505

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Met Ala Val Asn Gly			
8855			
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Glu Arg Ala Val His Asp Glu	Asn Leu Gly Val Leu	Asp Arg Glu	
8860	8865	8870	
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Glu Cys Asn Ser Cys Ala Ile	Thr Ser Ala Ser Arg	Leu Phe Leu	
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Val Gly Leu Gln Ala Ser Val	Ile Thr Ser Gly Leu	Ile Leu Gln	
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Tyr His Val Cys Glu Ala Ala	Val Asn Ala Thr Ile	Met Gly Leu	
8920	8925	8930	
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Thr Leu Ala Lys Leu Gly Arg	Cys Leu Gln Thr Val	Val Val Leu	
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8965	8970	8975	
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Gly Thr Val Ala Ala Val His	Ile His Tyr Tyr Asn	Phe Val Thr	
8995	9000	9005	
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Thr Phe Asn Gly Pro His Ile	Tyr Phe Tyr Val Met	Met Leu Gly	
9010	9015	9020	
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Thr Gly Leu Gly Gly Leu Leu	Thr Val Ile Leu Tyr	Met Tyr Val	
9025	9030	9035	



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Ser Lys	Tyr Glu	Val Leu	Ile Gly	Leu Cys	Ile Ser	Ile Val	Thr	
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9055			9060		9065			
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Ile Tyr	Arg Lys	Asn Arg	His His	Lys Gln	Leu Asn	Thr Tyr	Thr Asp	
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Cys Asp	His Arg	Glu Ser	Ser Ser	Arg Thr	Leu Lys	Arg Val	Phe Lys	
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Thr Pro	Leu Met	Trp Ala	Ile Ile	Ser His	Ile Ile	Lys Leu	Asn His	
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9145			9150		9155			
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His Ile	Ile Ala	Phe Gly	Leu Gln	Gly Gly	Phe Ala	Val Leu	Tyr Gln	
9160			9165		9170			
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Glu Lys	Lys Asn	Leu Trp	Val Ile	Val Val	Leu Tyr	Thr Thr	Thr Ser	
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Val Thr	Gly Ile	Ala Val	Thr Phe	Ala Ala	Gly Ile	Ser Trp	Gly Ala	
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Ile Ile	Ile Leu	Thr Ser	Thr Val	Ala Ala	Gly Leu	Thr Cys	Ile	
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Gln Met	Met Arg	Leu Ser	Val Lys	Pro Ile	Asp Cys	Phe Met	Ala	
9220			9225		9230			
tct cat	atc act	aaa gta	tat cac	gtg tgt	gtt tat	att ata	ata	103591
Ser His	Ile Thr	Lys Val	Tyr His	Val Cys	Val Tyr	Ile Ile	Ile	
9235			9240		9245			
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Asn Leu	Cys Tyr	Leu Cys	Gly Thr	Tyr Tyr	Val Ser			
9250			9255					



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tcg gcc gct tcc cga aag ccc gat ccc gca gcc aac acc caa cat Ser Ala Ala Ser Arg Lys Pro Asp Pro Ala Ala Asn Thr Gln His 9395 9400 9405	104209
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Ile Thr Arg Trp Lys	Ser Leu Ile Arg Pro	Asp Leu His Ile Glu	
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Val Trp Phe Thr Arg	His Leu Ile Asp Pro	His Arg Gln Leu Gly	
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cac gct aag gaa aat	tat gta ata cca gat	ggt aaa aca acg tct	104614
His Ala Lys Glu Asn	Tyr Val Ile Pro Asp	Val Lys Thr Thr Ser	
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Asp Phe Ser Val Thr	Ile Leu Ser Met Asp	Ala Thr Thr Glu Gly	
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Thr Tyr Ile Trp Arg	Val Val Asn Thr Lys	Thr Lys Asn Val Ile	
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Ser Glu His Ser Ile	Thr Val Thr Thr Tyr	Tyr Arg Pro Asn Ile	
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Tyr Cys Asn Val Ser	Lys Tyr Tyr Pro Pro	His Ser Val Arg Val	
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Ala Ile Gln Cys Asn	Val Leu Trp Ile Arg	Asp Gly Val Ser Asn	
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Met Lys Tyr Ser Ala	Val Val Thr Pro Asp	Val Tyr Pro Phe Pro	
9680	9685	9690	



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Lys Cys Val Pro Arg Gly Val Val His Phe Val Trp Trp Val Asn	
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attacgtaaa taaacgatag ggtcgtgaaa tatccaaaca cggcagaccg cgtattaaac 113934

agggggcctc ttatacacgc ctgccccttt tataggcaaa cggggtttacc acgtgctgcg 113994

taatacagaa cgagtaaata accggaaaca cgcattgataa gctaacgaaa taagggtctac 114054

acacaccccc aaaagggatg cgtagaagaa aagggtgggtg atcattgatc cgtcgatata 114114

aactocacga gccgaacagc tggcatgcca aaaattccgt tctgcaaagt ttggctcccc 114174

actgctgtct tcacaaaaaa ataaaatttg catcgttatt aat atg aac gaa gcg 114229  
Met Asn Glu Ala  
9820

gta att gat ccc atc ttg gaa acg gca gta aat aca ggt gat atg 114274  
Val Ile Asp Pro Ile Leu Glu Thr Ala Val Asn Thr Gly Asp Met  
9825 9830 9835

ttt tgt agc caa act att ccg aat cgg tgt tta aaa gat aca att 114319  
Phe Cys Ser Gln Thr Ile Pro Asn Arg Cys Leu Lys Asp Thr Ile  
9840 9845 9850

tta ata gaa gtt caa cct gaa tgt gca gat acg ctg caa tgc gtg 114364  
Leu Ile Glu Val Gln Pro Glu Cys Ala Asp Thr Leu Gln Cys Val  
9855 9860 9865

tta gac gat aaa gta agt cga cat caa ccg ttg tta ctc cgg aac 114409  
Leu Asp Asp Lys Val Ser Arg His Gln Pro Leu Leu Leu Arg Asn  
9870 9875 9880

cac aag aaa ctc gaa ctg cca tct gaa aaa tct gta aca cgg ggc 114454  
His Lys Lys Leu Glu Leu Pro Ser Glu Lys Ser Val Thr Arg Gly  
9885 9890 9895

ggg ttt tat atg cag cag ttg gag ctg ttg gtt aag tcg gcg cct 114499  
Gly Phe Tyr Met Gln Gln Leu Glu Leu Leu Val Lys Ser Ala Pro  
9900 9905 9910

ccc aat gaa tac gca ctg ttg tta att caa tgc aaa gat act gcc 114544  
Pro Asn Glu Tyr Ala Leu Leu Leu Ile Gln Cys Lys Asp Thr Ala  
9915 9920 9925

ctt gct gat gaa gac aat ttt ttt gtc gcc aac gga gtt att gat 114589  
Leu Ala Asp Glu Asp Asn Phe Phe Val Ala Asn Gly Val Ile Asp



9930	9935	9940	
gcg ggt tac aga gga gta att	tca gcc ctt ttg tat	tac cgg cca	114634
Ala Gly Tyr Arg Gly Val Ile	Ser Ala Leu Leu Tyr	Tyr Arg Pro	
9945	9950	9955	
gga gta acc gtt att tta ccc	gga cat tta aca atc	tac ttg ttc	114679
Gly Val Thr Val Ile Leu Pro	Gly His Leu Thr Ile	Tyr Leu Phe	
9960	9965	9970	
ccg gta aaa tta aga caa agt	cgc ctt ctc cca aaa	aac gtt ctt	114724
Pro Val Lys Leu Arg Gln Ser	Arg Leu Leu Pro Lys	Asn Val Leu	
9975	9980	9985	
aaa cat ctg gat cca att ttt	aaa tcg ata caa gtt	caa ccc tta	114769
Lys His Leu Asp Pro Ile Phe	Lys Ser Ile Gln Val	Gln Pro Leu	
9990	9995	10000	
tca aac tcg ccg tca aat tat	gaa aaa ccc gtt ata	cct gaa ttt	114814
Ser Asn Ser Pro Ser Asn Tyr	Glu Lys Pro Val Ile	Pro Glu Phe	
10005	10010	10015	
gct gat att tcc acg gta cag	cag ggg caa cct tta	cat agg gat	114859
Ala Asp Ile Ser Thr Val Gln	Gln Gly Gln Pro Leu	His Arg Asp	
10020	10025	10030	
tct gca gaa tac cat atc gat	gtt ccc tta acc tac	aaa cat atc	114904
Ser Ala Glu Tyr His Ile Asp	Val Pro Leu Thr Tyr	Lys His Ile	
10035	10040	10045	
atc aat cca aaa cgc caa gaa	gac gcg gga tat gat	att tgt gta	114949
Ile Asn Pro Lys Arg Gln Glu	Asp Ala Gly Tyr Asp	Ile Cys Val	
10050	10055	10060	
cca tat aac cta tat tta aaa	agg aat gaa ttt ata	aaa att gtc	114994
Pro Tyr Asn Leu Tyr Leu Lys	Arg Asn Glu Phe Ile	Lys Ile Val	
10065	10070	10075	
tta ccg att ata aga gac tgg	gac tta caa cat ccg	agt ata aac	115039
Leu Pro Ile Ile Arg Asp Trp	Asp Leu Gln His Pro	Ser Ile Asn	
10080	10085	10090	
gct tat att ttt gga aga tca	tcg aaa agc cga tca	ggc att atc	115084
Ala Tyr Ile Phe Gly Arg Ser	Ser Lys Ser Arg Ser	Gly Ile Ile	
10095	10100	10105	
gtg tgt cca acg gca tgg cct	gca gga gaa cac tgt	aaa ttc tac	115129
Val Cys Pro Thr Ala Trp Pro	Ala Gly Glu His Cys	Lys Phe Tyr	
10110	10115	10120	
gta tat aat ctc acg ggt gat	gac ata cgt ata aaa	acg gga gat	115174
Val Tyr Asn Leu Thr Gly Asp	Asp Ile Arg Ile Lys	Thr Gly Asp	
10125	10130	10135	
cgt ctt gca cag gtc ctg tta	ata gat cac aac acc	caa ata cac	115219
Arg Leu Ala Gln Val Leu Leu	Ile Asp His Asn Thr	Gln Ile His	
10140	10145	10150	
tta aaa cac aac gtt tta agt	aat att gca ttt cct	tat gct atc	115264
Leu Lys His Asn Val Leu Ser	Asn Ile Ala Phe Pro	Tyr Ala Ile	



10155	10160	10165	
cgc ggt    aaa tgt ggc ata ccg    ggt gta caa tgg tat    ttt act aaa 115309			
Arg Gly    Lys Cys Gly Ile Pro    Gly Val Gln Trp Tyr    Phe Thr Lys			
10170	10175	10180	
acg tta    gat cta ata gcc aca    ccc agc gaa cgg gga    acg cgt gga 115354			
Thr Leu    Asp Leu Ile Ala Thr    Pro Ser Glu Arg Gly    Thr Arg Gly			
10185	10190	10195	
ttt ggt    tca act gat aaa gaa    aca aac gat gtc gat    ttt cta cta 115399			
Phe Gly    Ser Thr Asp Lys Glu    Thr Asn Asp Val Asp    Phe Leu Leu			
10200	10205	10210	
aaa cat    taa atgtaataac caccgagcc agcaatgttt taattttata    115448			
Lys His			
10215			
tacaaaataa aaacatacac cagaaacggt tttagttttt atttcaatat ttatacaagc 115508			
ataacatggg atttcttgat cgcggggggt gtgcgttgta catcttgctg ctgttttggg 115568			
gtcaacacgg gctgaagagt ttctgtcgga tacgtttttt ttgttaggtt agatgtgtta 115628			
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acatcagaca tgaccacttc actttcagcg gtcattctca gggtttgatc gacaatatca 115868			
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tcttctaacg ttagaggtgc aggcaataat ccattcacag cggttaaagc ctcttgaggg 116168			
cggagcaggg cggctccttg ggggtgcgtg tttacacgca cctcttcata agatggctct 116228			
tcagttggta ttcgagcata tccacataag ctggcacaca ccgtctgcat gattgactgg 116288			
ctttccaacg tattgaact atg gat aaa tcc tcc    aaa ccg acg att cgg    116337			
	Met Asp Lys Ser Ser    Lys Pro Thr Ile Arg		
	10220	10225	
tta tta ttt gcc aca    aag gga tgt gca atc    tcc cac tcg ctg ttg    116382			
Leu Leu Phe Ala Thr    Lys Gly Cys Ala Ile    Ser His Ser Leu Leu			
10230	10235	10240	
ttg ctt acc ggg cag    ata agc aca gaa cct    ctg tat gtg gtg agt    116427			
Leu Leu Thr Gly Gln    Ile Ser Thr Glu Pro    Leu Tyr Val Val Ser			
10245	10250	10255	
tat act tgg act ccc    gac tta gat gac gtc    ttt gtc aaa aat ggg    116472			
Tyr Thr Trp Thr Pro    Asp Leu Asp Asp Val    Phe Val Lys Asn Gly			



10260					10265					10270					
agg gaa gag atc acg	caa gta atc cca act	aaa cgc cca cgt gaa	116517												
Arg Glu Glu Ile Thr	Gln Val Ile Pro Thr	Lys Arg Pro Arg Glu													
10275	10280	10285													
gta act gaa aac gat	gaa gaa aac caa ata	atg cat tta ttt tgt	116562												
Val Thr Glu Asn Asp	Glu Glu Asn Gln Ile	Met His Leu Phe Cys													
10290	10295	10300													
agt agg gac gtc aac	gtt att ttt tat tta	att ggt gga ttt tca	116607												
Ser Arg Asp Val Asn	Val Ile Phe Tyr Leu	Ile Gly Gly Phe Ser													
10305	10310	10315													
act gga gat gta cga	tcc cgg gtc tgg cct	ata ttt ttt tgt tgt	116652												
Thr Gly Asp Val Arg	Ser Arg Val Trp Pro	Ile Phe Phe Cys Cys													
10320	10325	10330													
ttt aaa acc caa act	gat ttt aaa gct tta	tat aag gcg tta tgg	116697												
Phe Lys Thr Gln Thr	Asp Phe Lys Ala Leu	Tyr Lys Ala Leu Trp													
10335	10340	10345													
tat gga gca ccc cta	aat ccg cat ata ata	tct gat acc cta tgt	116742												
Tyr Gly Ala Pro Leu	Asn Pro His Ile Ile	Ser Asp Thr Leu Cys													
10350	10355	10360													
ata tcg gag acg ttt	gac att cac tcg gaa	gtt ata caa act ctg	116787												
Ile Ser Glu Thr Phe	Asp Ile His Ser Glu	Val Ile Gln Thr Leu													
10365	10370	10375													
atg gta aca aca cac	cat tta aac cga aag	gga tta tcg gac aac	116832												
Met Val Thr Thr His	His Leu Asn Arg Lys	Gly Leu Ser Asp Asn													
10380	10385	10390													
ggc cta tgc atc aca	gag gca aca ctc tgc	aag tta gtt aaa aaa	116877												
Gly Leu Cys Ile Thr	Glu Ala Thr Leu Cys	Lys Leu Val Lys Lys													
10395	10400	10405													
tcc gtt ggt cgt cag	gag cta aca tca tta	tat gcc cat tac gaa	116922												
Ser Val Gly Arg Gln	Glu Leu Thr Ser Leu	Tyr Ala His Tyr Glu													
10410	10415	10420													
cgt caa gta ttg gct	gca tat cga cga ctc	tac tgg ggg tat gga	116967												
Arg Gln Val Leu Ala	Ala Tyr Arg Arg Leu	Tyr Trp Gly Tyr Gly													
10425	10430	10435													
tgc tcg ccg ttt tgg	tat att gtt cga ttt	gga ccc tct gaa aaa	117012												
Cys Ser Pro Phe Trp	Tyr Ile Val Arg Phe	Gly Pro Ser Glu Lys													
10440	10445	10450													
acg cta gtg ttg gct	aca cgc tat tac ttg	tta caa acg gac aca	117057												
Thr Leu Val Leu Ala	Thr Arg Tyr Tyr Leu	Leu Gln Thr Asp Thr													
10455	10460	10465													
agt tac aat acg ttg	gaa acc ccc tta tat	gac tta cag gca att	117102												
Ser Tyr Asn Thr Leu	Glu Thr Pro Leu Tyr	Asp Leu Gln Ala Ile													
10470	10475	10480													
aaa gat ttg ttt tta	act tac caa gtc ccg	gca tta cct aat tgt	117147												
Lys Asp Leu Phe Leu	Thr Tyr Gln Val Pro	Ala Leu Pro Asn Cys													



10485					10490					10495					
agt	ggg	tac	aat	att	tcg	gac	ttg	ttg	tct	ttt	gat	aaa	ctt	tcc	117192
Ser	Gly	Tyr	Asn	Ile	Ser	Asp	Leu	Leu	Ser	Phe	Asp	Lys	Leu	Ser	
				10500					10505					10510	
atg	ttt	tgt	tgt	tcc	tca	aca	tat	aca	cga	ggg	ttg	aca	gcc	aaa	117237
Met	Phe	Cys	Cys	Ser	Ser	Thr	Tyr	Thr	Arg	Gly	Leu	Thr	Ala	Lys	
				10515					10520					10525	
aat	gct	cta	tcg	tac	att	tta	cag	cga	ata	cat	aca	gac	aca	acg	117282
Asn	Ala	Leu	Ser	Tyr	Ile	Leu	Gln	Arg	Ile	His	Thr	Asp	Thr	Thr	
				10530					10535					10540	
gaa	ata	cac	gca	gta	tcg	gag	tat	att	acc	aac	gat	aga	aaa	ggc	117327
Glu	Ile	His	Ala	Val	Ser	Glu	Tyr	Ile	Thr	Asn	Asp	Arg	Lys	Gly	
				10545					10550					10555	
ctt	aaa	gtt	cca	gac	cgt	gaa	ttt	gtt	gat	tat	att	tat	ctg	gca	117372
Leu	Lys	Val	Pro	Asp	Arg	Glu	Phe	Val	Asp	Tyr	Ile	Tyr	Leu	Ala	
				10560					10565					10570	
cat	ttt	gaa	tgt	ttc	aat	cgg	aaa	cag	atc	gca	gac	cac	cta	caa	117417
His	Phe	Glu	Cys	Phe	Asn	Arg	Lys	Gln	Ile	Ala	Asp	His	Leu	Gln	
				10575					10580					10585	
gcg	gtt	aca	tac	tca	gat	ttt	gtg	aat	aaa	ccg	gtc	ctc	tta	aaa	117462
Ala	Val	Thr	Tyr	Ser	Asp	Phe	Val	Asn	Lys	Pro	Val	Leu	Leu	Lys	
				10590					10595					10600	
tca	tcc	aac	ctg	gga	aaa	aga	gct	act	gct	aat	ttt	ttt	aat	cat	117507
Ser	Ser	Asn	Leu	Gly	Lys	Arg	Ala	Thr	Ala	Asn	Phe	Phe	Asn	His	
				10605					10610					10615	
gta	cgt	tct	cgt	ctc	aac	atg	cgt	gac	tat	ata	aaa	aag	aac	gta	117552
Val	Arg	Ser	Arg	Leu	Asn	Met	Arg	Asp	Tyr	Ile	Lys	Lys	Asn	Val	
				10620					10625					10630	
att	tgt	gat	gtc	act	gaa	ctt	gga	cct	gag	att	gga	cat	aaa	tat	117597
Ile	Cys	Asp	Val	Thr	Glu	Leu	Gly	Pro	Glu	Ile	Gly	His	Lys	Tyr	
				10635					10640					10645	
aca	att	act	aaa	aca	tat	act	tta	agt	ctt	acg	tat	gcc	gca	aaa	117642
Thr	Ile	Thr	Lys	Thr	Tyr	Thr	Leu	Ser	Leu	Thr	Tyr	Ala	Ala	Lys	
				10650					10655					10660	
cct	agc	aag	ttt	ata	ggc	gta	tgt	gac	cta	gct	aca	acg	cta	act	117687
Pro	Ser	Lys	Phe	Ile	Gly	Val	Cys	Asp	Leu	Ala	Thr	Thr	Leu	Thr	
				10665					10670					10675	
cgt	cgt	gtg	gaa	aac	att	gaa	aaa	caa	ttt	agt	cca	tat	gga	tgg	117732
Arg	Arg	Val	Glu	Asn	Ile	Glu	Lys	Gln	Phe	Ser	Pro	Tyr	Gly	Trp	
				10680					10685					10690	
tcc	tcc	act	att	ccc	tca	aat	cca	ccc	ggg	ttt	gac	gaa	ttg	tct	117777
Ser	Ser	Thr	Ile	Pro	Ser	Asn	Pro	Pro	Gly	Phe	Asp	Glu	Leu	Ser	
				10695					10700					10705	
aat	ttt	gag	gat	tcg	ggg	gtt	tcc	gcg	gag	gcg	tta	cga	gca	gcc	117822
Asn	Phe	Glu	Asp	Ser	Gly	Val	Ser	Ala	Glu	Ala	Leu	Arg	Ala	Ala	



10710					10715					10720					
aac ttt gca aac gat	aca cct aac caa agt	ggt cgt act ggt ttt	117867												
Asn Phe Ala Asn Asp	Thr Pro Asn Gln Ser	Gly Arg Thr Gly Phe													
10725	10730	10735													
gat acg agc ccg ggg	att aca aaa cta tta	ctg ttt ttc tct gct	117912												
Asp Thr Ser Pro Gly	Ile Thr Lys Leu Leu	Leu Phe Phe Ser Ala													
10740	10745	10750													
gcc act ggg ata gcc	aca cat gat gta tcc	atc ctg agt tat aaa	117957												
Ala Thr Gly Ile Ala	Thr His Asp Val Ser	Ile Leu Ser Tyr Lys													
10755	10760	10765													
act cca tta gaa gcc	ctc atc ggc cat tct	gag gta act gga cca	118002												
Thr Pro Leu Glu Ala	Leu Ile Gly His Ser	Glu Val Thr Gly Pro													
10770	10775	10780													
atg cct gta tat cgg	gta gcc ttg cct cac	ggc gcc caa gca ttt	118047												
Met Pro Val Tyr Arg	Val Ala Leu Pro His	Gly Ala Gln Ala Phe													
10785	10790	10795													
gct gtt att gct aat	gat acg tgg tca tca	ata aca aac cgt tac	118092												
Ala Val Ile Ala Asn	Asp Thr Trp Ser Ser	Ile Thr Asn Arg Tyr													
10800	10805	10810													
act tta ccg cac gag	gct cga tta att gcg	gag gac ctt aaa caa	118137												
Thr Leu Pro His Glu	Ala Arg Leu Ile Ala	Glu Asp Leu Lys Gln													
10815	10820	10825													
att aat cca tgt aat	ttt gtt gcc gct tca	cta cga gat atg cag	118182												
Ile Asn Pro Cys Asn	Phe Val Ala Ala Ser	Leu Arg Asp Met Gln													
10830	10835	10840													
ttg act tta cta tta	tct acg tct gtt aaa	aac gtt tct aaa att	118227												
Leu Thr Leu Leu Leu	Ser Thr Ser Val Lys	Asn Val Ser Lys Ile													
10845	10850	10855													
tca tca aac ata ccc	aaa gat cag ctt tat	ata aac agg aat gag	118272												
Ser Ser Asn Ile Pro	Lys Asp Gln Leu Tyr	Ile Asn Arg Asn Glu													
10860	10865	10870													
cta ttt aat aca aat	ctt ata atc aca aac	ctc ata ctt gat gta	118317												
Leu Phe Asn Thr Asn	Leu Ile Ile Thr Asn	Leu Ile Leu Asp Val													
10875	10880	10885													
gac ttt cat ata aga	aaa ccc atc cca ttg	ggt att tta cat gcc	118362												
Asp Phe His Ile Arg	Lys Pro Ile Pro Leu	Gly Ile Leu His Ala													
10890	10895	10900													
ggc atg cga gca ttt	cgt cat ggt att tta	acg gcc atg caa tta	118407												
Gly Met Arg Ala Phe	Arg His Gly Ile Leu	Thr Ala Met Gln Leu													
10905	10910	10915													
ctt ttt cca aag gcc	gtg gta aac cct aac	aaa gac cca tgt tat	118452												
Leu Phe Pro Lys Ala	Val Val Asn Pro Asn	Lys Asp Pro Cys Tyr													
10920	10925	10930													
ttt tat aaa act gca	tgt cct gaa cct acc	gtt gag gtg ttg gat	118497												
Phe Tyr Lys Thr Ala	Cys Pro Glu Pro Thr	Val Glu Val Leu Asp													



10935					10940					10945					
gat	gat	aat	tta	ttg	gat	ata	acc	agc	cat	tct	gac	atc	gat	ttt	118542
Asp	Asp	Asn	Leu	Leu	Asp	Ile	Thr	Ser	His	Ser	Asp	Ile	Asp	Phe	
				10950					10955					10960	
tac	ata	gaa	aat	ggc	gaa	tta	tac	acg	tgt	gta	gaa	gag	aat	tat	118587
Tyr	Ile	Glu	Asn	Gly	Glu	Leu	Tyr	Thr	Cys	Val	Glu	Glu	Asn	Tyr	
				10965					10970					10975	
aca	gag	gat	gta	tgg	ttt	ttt	gat	aca	cag	aca	acg	tct	gaa	gtc	118632
Thr	Glu	Asp	Val	Trp	Phe	Phe	Asp	Thr	Gln	Thr	Thr	Ser	Glu	Val	
				10980					10985					10990	
cat	aca	cac	gcc	gat	gta	tca	aac	aat	gaa	aac	ttg	cat	gaa	act	118677
His	Thr	His	Ala	Asp	Val	Ser	Asn	Asn	Glu	Asn	Leu	His	Glu	Thr	
				10995					11000					11005	
cta	ccc	tgt	aac	tgt	aaa	gag	aaa	ata	ggg	ttc	agg	gta	tgc	gta	118722
Leu	Pro	Cys	Asn	Cys	Lys	Glu	Lys	Ile	Gly	Phe	Arg	Val	Cys	Val	
				11010					11015					11020	
cca	atc	cca	aat	ccc	tat	gcg	tta	gtg	ggg	tct	tcc	act	tta	aag	118767
Pro	Ile	Pro	Asn	Pro	Tyr	Ala	Leu	Val	Gly	Ser	Ser	Thr	Leu	Lys	
				11025					11030					11035	
ggg	ttt	gca	caa	ata	tta	cag	caa	gcg	gtg	ttg	ctg	gaa	cgg	gaa	118812
Gly	Phe	Ala	Gln	Ile	Leu	Gln	Gln	Ala	Val	Leu	Leu	Glu	Arg	Glu	
				11040					11045					11050	
ttt	gtt	gaa	tat	att	ggg	ccg	tat	tta	cgg	gac	ttt	tcg	ttt	ata	118857
Phe	Val	Glu	Tyr	Ile	Gly	Pro	Tyr	Leu	Arg	Asp	Phe	Ser	Phe	Ile	
				11055					11060					11065	
gat	act	ggg	gtt	tat	agc	cac	gga	cat	agt	tta	aga	ctg	cct	ttt	118902
Asp	Thr	Gly	Val	Tyr	Ser	His	Gly	His	Ser	Leu	Arg	Leu	Pro	Phe	
				11070					11075					11080	
ttc	tcc	aaa	gta	aca	acc	aca	ggg	acg	gcg	gtt	gga	caa	cta	ctc	118947
Phe	Ser	Lys	Val	Thr	Thr	Thr	Gly	Thr	Ala	Val	Gly	Gln	Leu	Leu	
				11085					11090					11095	
cca	ttt	tat	gtt	gta	cct	gag	cag	tgt	att	gat	ata	tta	gcg	ttt	118992
Pro	Phe	Tyr	Val	Val	Pro	Glu	Gln	Cys	Ile	Asp	Ile	Leu	Ala	Phe	
				11100					11105					11110	
gtg	aca	tca	cat	aga	aac	ccg	gca	aac	ttt	cat	ttt	cat	tca	aga	119037
Val	Thr	Ser	His	Arg	Asn	Pro	Ala	Asn	Phe	His	Phe	His	Ser	Arg	
				11115					11120					11125	
ccg	cag	tcg	aat	gtt	cca	gtg	caa	ttt	att	tta	cat	aac	ctt	ggg	119082
Pro	Gln	Ser	Asn	Val	Pro	Val	Gln	Phe	Ile	Leu	His	Asn	Leu	Gly	
				11130					11135					11140	
ggg	gaa	tac	gca	gag	ttt	ttt	gaa	cgt	aag	gtt	gcg	cgt	aat	aaa	119127
Gly	Glu	Tyr	Ala	Glu	Phe	Phe	Glu	Arg	Lys	Val	Ala	Arg	Asn	Lys	
				11145					11150					11155	
caa	ata	ttt	agc	tcc	ccg	caa	ata	tct	tta	aca	aag	gct	cta	aaa	119172
Gln	Ile	Phe	Ser	Ser	Pro	Gln	Ile	Ser	Leu	Thr	Lys	Ala	Leu	Lys	



11160					11165					11170					
gag	cgc	ggg	gta	act	tgt	ctg	gac	gca	ttt	aca	ctg	gag	gcc	ttt	119217
Glu	Arg	Gly	Val	Thr	Cys	Leu	Asp	Ala	Phe	Thr	Leu	Glu	Ala	Phe	
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Val	Asp	Ser	Thr	Ile	Leu	Glu	Ser	Ile	Val	Glu	His	Ile	Ala	Val	
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cat	ttc	ccc	ggg	cgt	gat	cgc	gaa	tat	acc	tta	aca	tca	tca	aag	119307
His	Phe	Pro	Gly	Arg	Asp	Arg	Glu	Tyr	Thr	Leu	Thr	Ser	Ser	Lys	
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tgt	atc	gcc	atc	aaa	agg	gac	tgg	gtg	tta	ttt	cag	ctc	ata	tgc	119352
Cys	Ile	Ala	Ile	Lys	Arg	Asp	Trp	Val	Leu	Phe	Gln	Leu	Ile	Cys	
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gga	aca	aaa	ggg	ttc	act	tgt	ctt	cga	tat	ccc	cat	cgc	gga	gga	119397
Gly	Thr	Lys	Gly	Phe	Thr	Cys	Leu	Arg	Tyr	Pro	His	Arg	Gly	Gly	
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aga	acg	gct	ccc	cgg	aca	ttt	gtg	tct	ctg	cga	gtg	gat	cat	cac	119442
Arg	Thr	Ala	Pro	Arg	Thr	Phe	Val	Ser	Leu	Arg	Val	Asp	His	His	
				11250					11255					11260	
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Asn	Arg	Leu	Cys	Ile	Ser	Leu	Ala	Gln	Gln	Cys	Phe	Ala	Thr	Lys	
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tgc	gat	agc	aat	cgc	atg	cat	aca	atc	ttt	act	cta	gaa	gta	cct	119532
Cys	Asp	Ser	Asn	Arg	Met	His	Thr	Ile	Phe	Thr	Leu	Glu	Val	Pro	
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Asn	Tyr	Pro	Asn	Leu	Thr	Ser	Ser								
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					Met	Gln	Ala	Leu	Gly	Ile					
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aag	aca	gaa	cat	ttt	ata	att	atg	tgt	cta	ctt	agc	gga	cat	gct	119673
Lys	Thr	Glu	His	Phe	Ile	Ile	Met	Cys	Leu	Leu	Ser	Gly	His	Ala	
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Val	Phe	Thr	Leu	Trp	Tyr	Thr	Ala	Arg	Val	Lys	Phe	Glu	His	Glu	
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tgt	gtg	tat	gca	acc	acg	gtg	att	aat	ggg	gga	ccg	gtt	gta	tgg	119763
Cys	Val	Tyr	Ala	Thr	Thr	Val	Ile	Asn	Gly	Gly	Pro	Val	Val	Trp	
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Gly	Ser	Tyr	Asn	Asn	Ser	Leu	Ile	Tyr	Val	Thr	Phe	Val	Asn	His	
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Ser	Thr	Phe	Leu	Asp	Gly	Leu	Ser	Gly	Tyr	Asp	Tyr	Ser	Cys	Arg	



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gaa	aat cta tta tca gga	gat act atg gta aaa	acc gct att tct	119898	
Glu	Asn Leu Leu Ser Gly	Asp Thr Met Val Lys	Thr Ala Ile Ser		
11380	11385	11390			
aca	cct ttg cat gac aaa	att cga att gtt ctg	gga aca cgt aat	119943	
Thr	Pro Leu His Asp Lys	Ile Arg Ile Val Leu	Gly Thr Arg Asn		
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Cys	His Ala Tyr Phe Trp	Cys Val Gln Leu Lys	Met Ile Phe Phe		
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Ala	Trp Phe Val Tyr Gly	Met Tyr Leu Gln Phe	Arg Arg Ile Arg		
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Arg	Met Phe Gly Pro Phe	Arg Ser Ser Cys Glu	Leu Ile Ser Pro		
11440	11445	11450			
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Thr	Ser Tyr Ser Leu Asn	Tyr Val Thr Arg Val	Ile Ser Asn Ile		
11455	11460	11465			
ctt	ctt ggt tac cca tat	aca aag ttg gca agg	ttg tta tgt gat	120168	
Leu	Leu Gly Tyr Pro Tyr	Thr Lys Leu Ala Arg	Leu Leu Cys Asp		
11470	11475	11480			
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Val	Ser Met Arg Arg Asp	Gly Met Ser Lys Val	Phe Asn Ala Asp		
11485	11490	11495			
cct	ata agt ttt tta tat	atg cat aaa ggt gtt	acg tta ttg atg	120258	
Pro	Ile Ser Phe Leu Tyr	Met His Lys Gly Val	Thr Leu Leu Met		
11500	11505	11510			
ctt	ttg gag gtt atc gct	cat ata tca tct gga	tgt att gtg ctt	120303	
Leu	Leu Glu Val Ile Ala	His Ile Ser Ser Gly	Cys Ile Val Leu		
11515	11520	11525			
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Leu	Thr Leu Gly Val Ala	Tyr Thr Pro Cys Ala	Leu Leu Tyr Pro		
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Thr	Tyr Ile Arg Ile Leu	Ala Trp Val Val Val	Cys Thr Leu Ala		
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ata	gta gag ctt ata tct	tat gtt aga cca aaa	cca acc aag gat	120438	
Ile	Val Glu Leu Ile Ser	Tyr Val Arg Pro Lys	Pro Thr Lys Asp		
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Asn	His Leu Asn His Ile	Asn Thr Gly Gly Ile	Arg Gly Ile Cys		
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aca	aca tgt tgc gct aca	gta atg tcc ggc ctt	gct ata aaa tgt	120528	
Thr	Thr Cys Cys Ala Thr	Val Met Ser Gly Leu	Ala Ile Lys Cys		



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Phe	Tyr Ile Val Ile	Phe	Ala Ile Ala Val	Val	Ile Phe Met His
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Tyr	Glu Gln Arg Val	Gln	Val Ser Leu Phe	Gly	Glu Ser Glu Asn
11620		11625		11630	
tcc	cag aag cat taa	tcattgtgact	aaacacgccc	attgcgggggt	tgggtgagcc 120673
Ser	Gln Lys His				
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	Met Ala	Ser Ala Ser Ile Pro	Thr Asp Pro Asp Val		
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Ser Thr Ile Cys Glu	Asp Phe Met Asn Leu	Leu Pro Asp Glu Pro			
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Ser Asp Asp Phe Ala	Leu Glu Val Thr Asp	Trp Ala Asn Asp Glu			
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gct att ggc tcc act	cca ggc gag gac tcc	aca acg tct aga act			120914
Ala Ile Gly Ser Thr	Pro Gly Glu Asp Ser	Thr Thr Ser Arg Thr			
	11685		11690		11695
gtg tat gtg gag cgt	act gca gat aca gca	tat aat cca cgg tat			120959
Val Tyr Val Glu Arg	Thr Ala Asp Thr Ala	Tyr Asn Pro Arg Tyr			
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tcc aaa cga agg cac	gga agg cgt gaa agc	tac cac cac aat cgc			121004
Ser Lys Arg Arg His	Gly Arg Arg Glu Ser	Tyr His His Asn Arg			
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ccg aaa act ttg gtt	gtt gta tta ccc gat	tca aac cat cat gga			121049
Pro Lys Thr Leu Val	Val Val Leu Pro Asp	Ser Asn His His Gly			
	11730		11735		11740
gga aga gac gtg gag	act gga tat gca cgc	atc gaa cgg gga cat			121094
Gly Arg Asp Val Glu	Thr Gly Tyr Ala Arg	Ile Glu Arg Gly His			
	11745		11750		11755
cga cga tca tcc aga	tct tat aac act caa	agt tca aga aaa cac			121139
Arg Arg Ser Ser Arg	Ser Tyr Asn Thr Gln	Ser Ser Arg Lys His			
	11760		11765		11770
cgt gat cga tcc ctg	tca aat cga aga cgg	cgt cct aca acg cct			121184
Arg Asp Arg Ser Leu	Ser Asn Arg Arg Arg	Arg Pro Thr Thr Pro			
	11775		11780		11785
cct gca atg acc acg	gga gaa aga aat gat	cag aca cat gac gaa			121229
Pro Ala Met Thr Thr	Gly Glu Arg Asn Asp	Gln Thr His Asp Glu			
	11790		11795		11800



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Ser Tyr Arg Leu Arg	Phe Ser Lys Arg Asp	Ala Arg Arg Glu Arg	
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Ile Arg Lys Glu Tyr	Asp Ile Pro Val Asp	Arg Ile Thr Gly Arg	
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gct att gaa gtc gtc	tcc acc gcg gga gcc	agc gtg acc att gac	121364
Ala Ile Glu Val Val	Ser Thr Ala Gly Ala	Ser Val Thr Ile Asp	
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Ser Val Arg His Leu	Asp Glu Thr Ile Glu	Lys Leu Val Val Arg	
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Tyr Ala Thr Ile Gln	Glu Gly Asp Ser Trp	Ala Ser Gly Gly Cys	
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Phe Pro Gly Ile Lys	Gln Asn Thr Ser Trp	Pro Glu Leu Met Leu	
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Tyr Gly His Glu Leu	Tyr Arg Thr Phe Glu	Ser Tyr Lys Met Asp	
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Ser Arg Ile Ala Arg	Ala Leu Arg Glu Arg	Val Ile Arg Gly Glu	
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Ser Leu Ile Glu Ala	Leu Glu Ser Ala Asp	Glu Leu Leu Thr Trp	
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Ile Lys Met Leu Ala	Ala Lys Asn Leu Pro	Ile Tyr Thr Asn Asn	
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ccc att gtt gca acc	tcg aag tca ctt ttg	gag aat tta aag tta	121724
Pro Ile Val Ala Thr	Ser Lys Ser Leu Leu	Glu Asn Leu Lys Leu	
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Lys Leu Gly Pro Phe	Val Arg Cys Leu Leu	Leu Asn Arg Asp Asn	
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Asp Leu Gly Ser Arg	Thr Leu Pro Glu Leu	Leu Arg Gln Gln Arg	
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Phe Ser Asp Ile Thr	Cys Ile Thr Thr Tyr	Met Phe Val Met Ile	
12000	12005	12010	
gcc cgc att gct aat	ata gtt gtc cgt ggc	tct aaa ttt gtg gaa	121904
Ala Arg Ile Ala Asn	Ile Val Val Arg Gly	Ser Lys Phe Val Glu	
12015	12020	12025	



tat gat gat atc agt	tgt aac gtt caa gtg	tta caa gaa tat aca	121949
Tyr Asp Asp Ile Ser	Cys Asn Val Gln Val	Leu Gln Glu Tyr Thr	
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ccc ggg tca tgt ctg	gcc ggt gtt tta gag	gcc cta atc acc cac	121994
Pro Gly Ser Cys Leu	Ala Gly Val Leu Glu	Ala Leu Ile Thr His	
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Gln Arg Glu Cys Gly	Arg Val Glu Cys Thr	Leu Ser Thr Trp Ala	
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Gly His Leu Ser Asp	Ala Arg Pro Tyr Gly	Lys Tyr Phe Lys Cys	
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agt acc ttt aac tgc	taa aataaaaaaat accttttttca	tgcttgtcaa	122132
Ser Thr Phe Asn Cys			
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His Ala Pro Thr Pro	Ser Pro Leu Tyr Gly	Val Lys Arg Leu Cys	
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Ala Leu Arg Ala Thr	Cys Gly Arg Ala Asp	Asp Leu His Ala Phe	
12150	12155	12160	
ttg att gga ctt gga	cgt cga gat aaa cca	tct gaa tcc cca atg	122704
Leu Ile Gly Leu Gly	Arg Arg Asp Lys Pro	Ser Glu Ser Pro Met	
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Tyr Val Asp Leu Gln	Pro Phe Cys Ser Leu	Leu Asn Ser Gln Arg	
12180	12185	12190	
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Leu Leu Pro Glu Met	Ala Asn Tyr Asn Thr	Leu Cys Asp Ala Pro	



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Gly Val His Leu Ala Ala	Ile Gly Tyr His Cys	His Cys Lys Ser			
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Pro Phe Ser Ala Glu Cys	Trp Thr Gly Ala Ser	Glu Ala Tyr Asp			
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Ser Glu	Tyr Gly Val Pro Glu	Gly Val Arg Glu Ser	Asp Ser Asp		
12275	12280	12285			
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Thr Asp	Ser Val Phe Met Tyr	Gln His Thr Glu Leu	Met Gln Asn		



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Asn Ala Ser Pro Leu Val Val	Gln Thr Arg Pro Pro	Ala Val Leu	
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Ile Pro Leu Val Asp Val Pro	Arg Pro Arg Ser Arg	Arg Lys Ala	
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Ser Ala Gln Leu Lys Met Gln	Met Asp Arg Leu Cys	Asn Val Leu	
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 <212> PRT  
 <213> Varicella zoster

<400> 52

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			20					25					30		

Pro	Gly	Pro	Leu	Asn	Gly	Arg	Asp	Thr	Ser	Arg	Gly	Pro	Gly	Ala	Phe
		35				40						45			



Cys Thr Pro Gly Trp Glu Ile His Pro Ala Arg Leu Val Glu Asp Ile  
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Asn Arg Val Phe Leu Cys Ile Ala Gln Ser Ser Gly Arg Val Thr Arg  
 65 70 75 80

Asp Ser Arg Arg Leu Arg Arg Ile Cys Leu Asp Phe Tyr Leu Met Gly  
 85 90 95

Arg Thr Arg Gln Arg Pro Thr Leu Ala Cys Trp Glu Glu Leu Leu Gln  
 100 105 110

Leu Gln Pro Thr Gln Thr Gln Cys Leu Arg Ala Thr Leu Met Glu Val  
 115 120 125

Ser His Arg Pro Pro Arg Gly Glu Asp Gly Phe Ile Glu Ala Pro Asn  
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Val Pro Leu His Arg Ser Ala Leu Glu Cys Asp Val Ser Asp Asp Gly  
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Gly Glu Asp Asp Ser Asp Asp Asp Gly Ser Thr Pro Ser Asp Val Ile  
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Glu Phe Arg Asp Ser Asp Ala Glu Ser Ser Asp Gly Glu Asp Phe Ile  
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Val Glu Glu Glu Ser Glu Glu Ser Thr Asp Ser Cys Glu Pro Asp Gly  
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Val Pro Gly Asp Cys Tyr Arg Asp Gly Asp Gly Cys Asn Thr Pro Ser  
 210 215 220

Pro Lys Arg Pro Gln Arg Ala Ile Glu Arg Tyr Ala Gly Ala Glu Thr  
 225 230 235 240

Ala Glu Tyr Thr Ala Ala Lys Ala Leu Thr Ala Leu Gly Glu Gly Gly  
 245 250 255

Val Asp Trp Lys Arg Arg Arg His Glu Ala Pro Arg Arg His Asp Ile  
 260 265 270

Pro Pro Pro His Gly Val  
 275



<210> 53  
 <211> 180  
 <212> PRT  
 <213> Varicella zoster

<400> 53

Met Asn Leu Cys Gly Ser Arg Gly Glu His Pro Gly Gly Glu Tyr Ala  
 1 5 10 15

Gly Leu Tyr Cys Thr Arg His Asp Thr Pro Ala His Gln Ala Leu Met  
 20 25 30

Asn Asp Ala Glu Arg Tyr Phe Ala Ala Ala Leu Cys Ala Ile Ser Thr  
 35 40 45

Glu Ala Tyr Glu Ala Phe Ile His Ser Pro Ser Glu Arg Pro Cys Ala  
 50 55 60

Ser Leu Trp Gly Arg Ala Lys Asp Ala Phe Gly Arg Met Cys Gly Glu  
 65 70 75 80

Leu Ala Ala Asp Arg Gln Arg Pro Pro Ser Val Pro Pro Ile Arg Arg  
 85 90 95

Ala Val Leu Ser Leu Leu Arg Glu Gln Cys Met Pro Asp Pro Gln Ser  
 100 105 110

His Leu Glu Leu Ser Glu Arg Leu Ile Leu Met Ala Tyr Trp Cys Cys  
 115 120 125

Leu Gly His Ala Gly Leu Pro Thr Ile Gly Leu Ser Pro Asp Asn Lys  
 130 135 140

Cys Ile Arg Ala Glu Leu Tyr Asp Arg Pro Gly Gly Ile Cys His Arg  
 145 150 155 160

Leu Phe Asp Ala Tyr Leu Gly Cys Gly Ser Leu Gly Val Pro Arg Thr  
 165 170 175

Tyr Glu Arg Ser  
 180

<210> 54  
 <211> 102  
 <212> PRT



<213> Varicella zoster

<400> 54

Met Ala Gly Gln Asn Thr Met Glu Gly Glu Ala Val Ala Leu Leu Met  
1 5 10 15

Glu Ala Val Val Thr Pro Arg Ala Gln Pro Asn Asn Thr Thr Ile Thr  
20 25 30

Ala Ile Gln Pro Ser Arg Ser Ala Glu Lys Cys Tyr Tyr Ser Asp Ser  
35 40 45

Glu Asn Glu Thr Ala Asp Glu Phe Leu Arg Arg Ile Gly Lys Tyr Gln  
50 55 60

His Lys Ile Tyr His Arg Lys Lys Phe Cys Tyr Ile Thr Leu Ile Ile  
65 70 75 80

Val Phe Val Phe Ala Met Thr Gly Ala Ala Phe Ala Leu Gly Tyr Ile  
85 90 95

Thr Ser Gln Phe Val Gly  
100

<210> 55

<211> 1310

<212> PRT

<213> Varicella zoster

<400> 55

Met Asp Thr Pro Pro Met Gln Arg Ser Thr Pro Gln Arg Ala Gly Ser  
1 5 10 15

Pro Asp Thr Leu Glu Leu Met Asp Leu Leu Asp Ala Ala Ala Ala Ala  
20 25 30

Ala Glu His Arg Ala Arg Val Val Thr Ser Ser Gln Pro Asp Asp Leu  
35 40 45

Leu Phe Gly Glu Asn Gly Val Met Val Gly Arg Glu His Glu Ile Val  
50 55 60

Ser Ile Pro Ser Val Ser Gly Leu Gln Pro Glu Pro Arg Thr Glu Asp  
65 70 75 80

Val Gly Glu Glu Leu Thr Gln Asp Asp Tyr Val Cys Glu Asp Gly Gln  
367



85

90

95

Asp Leu Met Gly Ser Pro Val Ile Pro Leu Ala Glu Val Phe His Thr  
 100 105 110

Arg Phe Ser Glu Ala Gly Ala Arg Glu Pro Thr Gly Ala Asp Arg Ser  
 115 120 125

Leu Glu Thr Val Ser Leu Gly Thr Lys Leu Ala Arg Ser Pro Lys Pro  
 130 135 140

Pro Met Asn Asp Gly Glu Thr Gly Arg Gly Thr Thr Pro Pro Phe Pro  
 145 150 155 160

Gln Ala Phe Ser Pro Val Ser Pro Ala Ser Pro Val Gly Asp Ala Ala  
 165 170 175

Gly Asn Asp Gln Arg Glu Asp Gln Arg Ser Ile Pro Arg Gln Thr Thr  
 180 185 190

Arg Gly Asn Ser Pro Gly Leu Pro Ser Val Val His Arg Asp Arg Gln  
 195 200 205

Thr Gln Ser Ile Ser Gly Lys Lys Pro Gly Asp Glu Gln Ala Gly His  
 210 215 220

Ala His Ala Ser Gly Asp Gly Val Val Leu Gln Lys Thr Gln Arg Pro  
 225 230 235 240

Ala Gln Gly Lys Ser Pro Lys Lys Lys Thr Leu Lys Val Lys Val Pro  
 245 250 255

Leu Pro Ala Arg Lys Pro Gly Gly Pro Val Pro Gly Pro Val Glu Gln  
 260 265 270

Leu Tyr His Val Leu Ser Asp Ser Val Pro Ala Lys Gly Ala Lys Ala  
 275 280 285

Asp Leu Pro Phe Glu Thr Asp Asp Thr Arg Pro Arg Lys His Asp Ala  
 290 295 300

Arg Gly Ile Thr Pro Arg Val Pro Gly Arg Ser Ser Gly Gly Lys Pro  
 305 310 315 320

Arg Ala Phe Leu Ala Leu Pro Gly Arg Ser His Ala Pro Asp Pro Ile  
 368



325							330							335						
Glu	Asp	Asp	Ser	Pro	Val	Glu	Lys	Lys	Pro	Lys	Ser	Arg	Glu	Phe	Val					
			340					345					350							
Ser	Ser	Ser	Ser	Ser	Ser	Ser	Ser	Trp	Gly	Ser	Ser	Ser	Glu	Asp	Glu					
		355					360						365							
Asp	Asp	Glu	Pro	Arg	Arg	Val	Ser	Val	Gly	Ser	Glu	Thr	Thr	Gly	Ser					
	370					375					380									
Arg	Ser	Gly	Arg	Glu	His	Ala	Pro	Ser	Pro	Ser	Asn	Ser	Asp	Asp	Ser					
385					390					395					400					
Asp	Ser	Asn	Asp	Gly	Gly	Ser	Thr	Lys	Gln	Asn	Ile	Gln	Pro	Gly	Tyr					
				405					410					415						
Arg	Ser	Ile	Ser	Gly	Pro	Asp	Pro	Arg	Ile	Arg	Lys	Thr	Lys	Arg	Leu					
			420					425					430							
Ala	Gly	Glu	Pro	Gly	Arg	Gln	Arg	Gln	Lys	Ser	Phe	Ser	Leu	Pro	Arg					
		435						440				445								
Ser	Arg	Thr	Pro	Ile	Ile	Pro	Pro	Val	Ser	Gly	Pro	Leu	Met	Met	Pro					
	450					455					460									
Asp	Gly	Ser	Pro	Trp	Pro	Gly	Ser	Ala	Pro	Leu	Pro	Ser	Asn	Arg	Val					
465					470				475						480					
Arg	Phe	Gly	Pro	Ser	Gly	Glu	Thr	Arg	Glu	Gly	His	Trp	Glu	Asp	Glu					
				485					490					495						
Ala	Val	Arg	Ala	Ala	Arg	Ala	Arg	Tyr	Glu	Ala	Ser	Thr	Glu	Pro	Val					
			500					505					510							
Pro	Leu	Tyr	Val	Pro	Glu	Leu	Gly	Asp	Pro	Ala	Arg	Gln	Tyr	Arg	Ala					
		515					520					525								
Leu	Ile	Asn	Leu	Ile	Tyr	Cys	Pro	Asp	Arg	Asp	Pro	Ile	Ala	Trp	Leu					
	530					535					540									
Gln	Asn	Pro	Lys	Leu	Thr	Gly	Val	Asn	Ser	Ala	Leu	Asn	Gln	Phe	Tyr					
545					550					555					560					
Gln	Lys	Leu	Leu	Pro	Pro	Gly	Arg	Ala	Gly	Thr	Ala	Val	Thr	Gly	Ser					



565

570

575

Val Ala Ser Pro Val Pro His Val Gly Glu Ala Met Ala Thr Gly Glu  
580 585 590

Ala Leu Trp Ala Leu Pro His Ala Ala Ala Ala Val Ala Met Ser Arg  
595 600 605

Arg Tyr Asp Arg Ala Gln Lys His Phe Ile Leu Gln Ser Leu Arg Arg  
610 615 620

Ala Phe Ala Ser Met Ala Tyr Pro Glu Ala Thr Gly Ser Ser Pro Ala  
625 630 635 640

Ala Arg Ile Ser Arg Gly His Pro Ser Pro Thr Thr Pro Ala Thr Gln  
645 650 655

Ala Pro Asp Pro Gln Pro Ser Ala Ala Ala Arg Ser Leu Ser Val Cys  
660 665 670

Pro Pro Asp Asp Arg Leu Arg Thr Pro Arg Lys Arg Lys Ser Gln Pro  
675 680 685

Val Glu Ser Arg Ser Leu Leu Asp Lys Ile Arg Glu Thr Pro Val Ala  
690 695 700

Asp Ala Arg Val Ala Asp Asp His Val Val Ser Lys Ala Lys Arg Arg  
705 710 715 720

Val Ser Glu Pro Val Thr Ile Thr Ser Gly Pro Val Val Asp Pro Pro  
725 730 735

Ala Val Ile Thr Met Pro Leu Asp Gly Pro Ala Pro Asn Gly Gly Phe  
740 745 750

Arg Arg Ile Pro Arg Gly Ala Leu His Thr Pro Val Pro Ser Asp Gln  
755 760 765

Ala Arg Lys Ala Tyr Cys Thr Pro Glu Thr Ile Ala Arg Leu Val Asp  
770 775 780

Asp Pro Leu Phe Pro Thr Ala Trp Arg Pro Ala Leu Ser Phe Asp Pro  
785 790 795 800

Gly Ala Leu Ala Glu Ile Ala Ala Arg Arg Pro Gly Gly Gly Asp Arg  
370



805										810					815				
Arg	Phe	Gly	Pro	Pro	Ser	Gly	Val	Glu	Ala	Leu	Arg	Arg	Arg	Cys	Ala				
			820					825					830						
Trp	Met	Arg	Gln	Ile	Pro	Asp	Pro	Glu	Asp	Val	Arg	Leu	Leu	Ile	Ile				
		835					840					845							
Tyr	Asp	Pro	Leu	Pro	Gly	Glu	Asp	Ile	Asn	Gly	Pro	Leu	Glu	Ser	Thr				
	850					855				860									
Leu	Ala	Thr	Asp	Pro	Gly	Pro	Ser	Trp	Ser	Pro	Ser	Arg	Gly	Gly	Leu				
865					870					875					880				
Ser	Val	Val	Leu	Ala	Ala	Leu	Ser	Asn	Arg	Leu	Cys	Leu	Pro	Ser	Thr				
			885						890					895					
His	Ala	Trp	Ala	Gly	Asn	Trp	Thr	Gly	Pro	Pro	Asp	Val	Ser	Ala	Leu				
			900					905					910						
Asn	Ala	Arg	Gly	Val	Leu	Leu	Leu	Ser	Thr	Arg	Asp	Leu	Ala	Phe	Ala				
		915					920					925							
Gly	Ala	Val	Glu	Tyr	Leu	Gly	Ser	Arg	Leu	Ala	Ser	Ala	Arg	Arg	Arg				
	930					935					940								
Leu	Leu	Val	Leu	Asp	Ala	Val	Ala	Leu	Glu	Arg	Trp	Pro	Arg	Asp	Gly				
945				950					955						960				
Pro	Ala	Leu	Ser	Gln	Tyr	His	Val	Tyr	Val	Arg	Ala	Pro	Ala	Arg	Pro				
				965				970						975					
Asp	Ala	Gln	Ala	Val	Val	Arg	Trp	Pro	Asp	Ser	Ala	Val	Thr	Glu	Gly				
		980						985					990						
Leu	Ala	Arg	Ala	Val	Phe	Ala	Ser	Ser	Arg	Thr	Phe	Gly	Pro	Ala	Ser				
		995					1000					1005							
Phe	Ala	Arg	Ile	Glu	Thr	Ala	Phe	Ala	Asn	Leu	Tyr	Pro	Gly	Glu					
	1010					1015					1020								
Gln	Pro	Leu	Cys	Leu	Cys	Arg	Gly	Gly	Asn	Val	Ala	Tyr	Thr	Val					
	1025					1030					1035								
Cys	Thr	Arg	Ala	Gly	Pro	Lys	Thr	Arg	Val	Pro	Leu	Ser	Pro	Arg					



1040		1045		1050
Glu Tyr Arg Gln Tyr Val	Leu Pro Gly Phe Asp	Gly Cys Lys Asp		
1055	1060	1065		
Leu Ala Arg Gln Ser Arg	Gly Leu Gly Leu Gly	Ala Ala Asp Phe		
1070	1075	1080		
Val Asp Glu Ala Ala His	Ser His Arg Ala Ala	Asn Arg Trp Gly		
1085	1090	1095		
Leu Gly Ala Ala Leu Arg	Pro Val Phe Leu Pro	Glu Gly Arg Arg		
1100	1105	1110		
Pro Gly Ala Ala Gly Pro	Glu Ala Gly Asp Val	Pro Thr Trp Ala		
1115	1120	1125		
Arg Val Phe Cys Arg His	Ala Leu Leu Glu Pro	Asp Pro Ala Ala		
1130	1135	1140		
Glu Pro Leu Val Leu Pro	Pro Val Ala Gly Arg	Ser Val Ala Leu		
1145	1150	1155		
Tyr Ala Ser Ala Asp Glu	Ala Arg Asn Ala Leu	Pro Pro Ile Pro		
1160	1165	1170		
Arg Val Met Trp Pro Pro	Gly Phe Gly Ala Ala	Glu Thr Val Leu		
1175	1180	1185		
Glu Gly Ser Asp Gly Thr	Arg Phe Val Phe Gly	His His Gly Gly		
1190	1195	1200		
Ser Glu Arg Pro Ser Glu	Thr Gln Ala Gly Arg	Gln Arg Arg Thr		
1205	1210	1215		
Ala Asp Asp Arg Glu His	Ala Leu Glu Leu Asp	Asp Trp Glu Val		
1220	1225	1230		
Gly Cys Glu Asp Ala Trp	Asp Ser Glu Glu Gly	Gly Gly Asp Asp		
1235	1240	1245		
Gly Asp Ala Pro Gly Ser	Ser Phe Gly Val Ser	Ile Val Ser Val		
1250	1255	1260		
Ala Pro Gly Val Leu Arg	Asp Arg Arg Val Gly	Leu Arg Pro Ala		



1265

1270

1275

Val Lys Val Glu Leu Leu Ser Ser Ser Ser Ser Glu Asp Glu  
 1280 1285 1290

Asp Asp Val Trp Gly Gly Arg Gly Gly Arg Ser Pro Pro Gln Ser  
 1295 1300 1305

Arg Gly  
 1310

&lt;210&gt; 56

&lt;211&gt; 467

&lt;212&gt; PRT

&lt;213&gt; Varicella zoster

&lt;400&gt; 56

Met Asp Thr Ile Leu Ala Gly Gly Ser Gly Thr Ser Asp Ala Ser Asp  
 1 5 10 15

Asn Thr Cys Thr Ile Cys Met Ser Thr Val Ser Asp Leu Gly Lys Thr  
 20 25 30

Met Pro Cys Leu His Asp Phe Cys Phe Val Cys Ile Arg Ala Trp Thr  
 35 40 45

Ser Thr Ser Val Gln Cys Pro Leu Cys Arg Cys Pro Val Gln Ser Ile  
 50 55 60

Leu His Lys Ile Val Ser Asp Thr Ser Tyr Lys Glu Tyr Glu Val His  
 65 70 75 80

Pro Ser Asp Asp Asp Gly Phe Ser Glu Pro Ser Phe Glu Asp Ser Ile  
 85 90 95

Asp Ile Leu Pro Gly Asp Val Ile Asp Leu Leu Pro Pro Ser Pro Gly  
 100 105 110

Pro Ser Arg Glu Ser Ile Gln Gln Pro Thr Ser Arg Ser Ser Arg Glu  
 115 120 125

Pro Ile Gln Ser Pro Asn Pro Gly Pro Leu Gln Ser Ser Ala Arg Glu  
 130 135 140

Pro Thr Ala Glu Ser Pro Ser Asp Ser Gln Gln Asp Ser Ile Gln Pro  
 145 150 155 160



Pro Thr Arg Asp Ser Ser Pro Gly Val Thr Lys Thr Cys Ser Thr Ala  
165 170 175

Ser Phe Leu Arg Lys Val Phe Phe Lys Asp Gln Pro Ala Val Arg Ser  
180 185 190

Ala Thr Pro Val Val Tyr Gly Ser Ile Glu Ser Ala Gln Gln Pro Arg  
195 200 205

Thr Gly Gly Gln Asp Tyr Arg Asp Arg Pro Val Ser Val Gly Ile Asn  
210 215 220

Gln Asp Pro Arg Thr Met Asp Arg Leu Pro Phe Arg Ala Thr Asp Arg  
225 230 235 240

Gly Thr Glu Gly Asn Ala Arg Phe Pro Cys Tyr Met Gln Pro Leu Leu  
245 250 255

Gly Trp Leu Asp Asp Gln Leu Ala Glu Leu Tyr Gln Pro Glu Ile Val  
260 265 270

Glu Pro Thr Lys Met Leu Ile Leu Asn Tyr Ile Gly Ile Tyr Gly Arg  
275 280 285

Asp Glu Ala Gly Leu Lys Thr Ser Leu Arg Cys Leu Leu His Asp Ser  
290 295 300

Thr Gly Pro Phe Val Thr Asn Met Leu Phe Leu Leu Asp Arg Cys Thr  
305 310 315 320

Asp Pro Thr Arg Leu Thr Met Gln Thr Trp Thr Trp Lys Asp Thr Ala  
325 330 335

Ile Gln Leu Ile Thr Gly Pro Ile Val Arg Pro Glu Thr Thr Ser Thr  
340 345 350

Gly Glu Thr Ser Arg Gly Asp Glu Arg Asp Thr Arg Leu Val Asn Thr  
355 360 365

Pro Gln Lys Val Arg Leu Phe Ser Val Leu Pro Gly Ile Lys Pro Gly  
370 375 380

Ser Ala Arg Gly Ala Lys Arg Arg Leu Phe His Thr Gly Arg Asp Val  
385 390 395 400



Lys Arg Cys Leu Thr Ile Asp Leu Thr Ser Glu Ser Asp Ser Ala Cys  
405 410 415

Lys Gly Ser Lys Thr Arg Lys Val Ala Ser Pro Gln Gly Glu Ser Asn  
420 425 430

Thr Pro Ser Thr Ser Gly Ser Thr Ser Gly Ser Leu Lys His Leu Thr  
435 440 445

Lys Lys Ser Ser Ala Gly Lys Ala Gly Lys Gly Ile Pro Asn Lys Met  
450 455 460

Lys Lys Ser  
465

<210> 57  
<211> 305  
<212> PRT  
<213> Varicella zoster

<400> 57

Met Asp Val Ser Gly Glu Pro Thr Val Cys Ser Asn Ala Tyr Ala Asn  
1 5 10 15

Glu Met Lys Leu Ser Asp Ser Lys Asp Ile Tyr Val Leu Ala His Pro  
20 25 30

Val Thr Lys Lys Thr Arg Lys Arg Pro Arg Gly Leu Pro Leu Gly Val  
35 40 45

Lys Leu Asp Pro Pro Thr Phe Lys Leu Asn Asn Met Ser His His Tyr  
50 55 60

Asp Thr Glu Thr Phe Thr Pro Val Ser Ser Gln Leu Asp Ser Val Glu  
65 70 75 80

Val Phe Ser Lys Phe Asn Ile Ser Pro Glu Trp Tyr Asp Leu Leu Ser  
85 90 95

Asp Glu Leu Lys Glu Pro Tyr Ala Lys Gly Ile Phe Leu Glu Tyr Asn  
100 105 110

Arg Leu Leu Asn Ser Gly Glu Glu Ile Leu Pro Ser Thr Gly Asp Ile  
115 120 125



Phe Ala Trp Thr Arg Phe Cys Gly Pro Gln Ser Ile Arg Val Val Ile  
 130 135 140

Ile Gly Gln Asp Pro Tyr Pro Thr Ala Gly His Ala His Gly Leu Ala  
 145 150 155 160

Phe Ser Val Lys Arg Gly Ile Thr Pro Pro Ser Ser Leu Lys Asn Ile  
 165 170 175

Phe Ala Ala Leu Met Glu Ser Tyr Pro Asn Met Thr Pro Pro Thr His  
 180 185 190

Gly Cys Leu Glu Ser Trp Ala Arg Gln Gly Val Leu Leu Leu Asn Thr  
 195 200 205

Thr Leu Thr Val Arg Arg Gly Thr Pro Gly Ser His Val Tyr Leu Gly  
 210 215 220

Trp Gly Arg Leu Val Gln Arg Val Leu Gln Arg Leu Cys Glu Asn Arg  
 225 230 235 240

Thr Gly Leu Val Phe Met Leu Trp Gly Ala His Ala Gln Lys Thr Thr  
 245 250 255

Gln Pro Asn Ser Arg Cys His Leu Val Leu Thr His Ala His Pro Ser  
 260 265 270

Pro Leu Ser Arg Val Pro Phe Arg Asn Cys Arg His Phe Val Gln Ala  
 275 280 285

Asn Glu Tyr Phe Thr Arg Lys Gly Glu Pro Glu Ile Asp Trp Ser Val  
 290 295 300

Ile  
 305

<210> 58  
 <211> 71  
 <212> PRT  
 <213> Varicella zoster

<400> 58

Met Asp Val Arg Glu Arg Asn Val Phe Gly Asn Ala Ser Val Ala Thr  
 1 5 10 15



Pro Gly Glu His Gln Lys Phe Val Arg Glu Leu Ile Leu Ser Gly His  
20 25 30

Asn Asn Val Val Leu Gln Thr Tyr Thr Gly Lys Trp Ser Asp Cys Arg  
35 40 45

Lys His Gly Lys Ser Val Met Tyr Asn Thr Gly Glu Ala Arg His Pro  
50 55 60

Thr Cys Lys Ala His Gln Arg  
65 70

<210> 59

<211> 331

<212> PRT

<213> Varicella zoster

<400> 59

Met Gln Arg Ile Arg Pro Tyr Trp Ile Lys Phe Glu Gln Thr Gly Gly  
1 5 10 15

Ala Gly Met Ala Asp Gly Met Ser Gly Ile Asn Ile Pro Ser Ile Leu  
20 25 30

Gly Cys Ser Val Thr Ile Asp Asn Leu Leu Thr Arg Ala Glu Glu Gly  
35 40 45

Leu Asp Val Ser Asp Val Ile Glu Asp Leu Arg Ile Gln Ala Ile Pro  
50 55 60

Arg Phe Val Cys Glu Ala Arg Glu Val Thr Gly Leu Lys Pro Arg Phe  
65 70 75 80

Leu Ala Asn Ser Val Val Ser Leu Arg Val Lys Pro Glu His Gln Glu  
85 90 95

Thr Val Leu Val Val Leu Asn Gly Asp Ser Ser Glu Val Ser Cys Asp  
100 105 110

Arg Tyr Tyr Met Glu Cys Val Thr Gln Pro Ala Phe Arg Gly Phe Ile  
115 120 125

Phe Ser Val Leu Thr Ala Val Glu Asp Arg Val Tyr Thr Val Gly Val  
130 135 140

Pro Pro Arg Leu Leu Ile Tyr Arg Met Thr Leu Phe Arg Pro Asp Asn  
377



145		150		155		160									
Val	Leu	Asp	Phe	Thr	Leu	Cys	Val	Ile	Leu	Met	Tyr	Leu	Glu	Gly	Ile
				165					170					175	
Gly	Pro	Ser	Gly	Ala	Ser	Pro	Ser	Leu	Phe	Val	Gln	Leu	Ser	Val	Tyr
			180					185					190		
Leu	Arg	Arg	Val	Glu	Cys	Gln	Ile	Gly	Pro	Leu	Glu	Lys	Met	Arg	Arg
		195					200					205			
Phe	Leu	Tyr	Glu	Gly	Val	Leu	Trp	Leu	Leu	Asn	Thr	Leu	Met	Tyr	Val
	210					215					220				
Val	Asp	Asn	Asn	Pro	Phe	Thr	Lys	Thr	Arg	Val	Leu	Pro	His	Tyr	Met
225					230					235					240
Phe	Val	Lys	Leu	Leu	Asn	Pro	Gln	Pro	Gly	Thr	Ala	Pro	Asn	Ile	Ile
			245						250					255	
Lys	Ala	Ile	Tyr	Ser	Cys	Gly	Val	Gly	Gln	Arg	Phe	Asp	Leu	Pro	His
		260						265					270		
Gly	Thr	Pro	Pro	Cys	Pro	Asp	Gly	Val	Val	Gln	Val	Pro	Pro	Gly	Leu
		275					280					285			
Leu	Asn	Gly	Pro	Leu	Arg	Asp	Ser	Glu	Tyr	Gln	Lys	Ser	Val	Tyr	Phe
	290					295					300				
Trp	Trp	Leu	Asn	Arg	Thr	Met	Val	Thr	Pro	Lys	Asn	Val	Gln	Leu	Phe
305					310					315					320
Glu	Thr	Tyr	Lys	Asn	Ser	Pro	Arg	Val	Val	Lys					
			325						330						

<210> 60  
 <211> 541  
 <212> PRT  
 <213> Varicella zoster

<400> 60

Met	Glu	Phe	Pro	Tyr	His	Ser	Thr	Val	Ser	Tyr	Asn	Gly	Val	Thr	Phe
1				5					10					15	
Tyr	Phe	Asn	Glu	Arg	Ala	Thr	Arg	Ala	Tyr	Phe	Ile	Cys	Gly	Gly	Cys
		20						25					30		



Leu Ile Ser Ile Pro Arg Lys His Gly Gly Glu Ile Ala Lys Phe Gly  
 35 40 45  
 His Val Val Arg Gly Val Gly Pro Gly Asp Arg Ser Val Ala Ser Tyr  
 50 55 60  
 Val Arg Ser Glu Leu Asn Arg Thr Gly Lys Thr Trp Ala Val Ser Ser  
 65 70 75 80  
 Asn Asn Asn Cys Val Phe Leu Asp Arg Val Ala Leu Leu Ala Ala Gly  
 85 90 95  
 Ser Gly Ala Val Asp Arg Asp Leu Cys Gly Thr Phe Asp Val Glu Val  
 100 105 110  
 Glu Asp Pro Thr Leu Ala Asp Tyr Leu Val Ser Leu Pro Val Thr His  
 115 120 125  
 Leu Thr Leu Val Ala Gly Val Asp Val Thr Arg Glu Asn Lys Leu Lys  
 130 135 140  
 Leu Phe Pro Thr Pro Thr Ala Ile Asn Thr Thr Asn Gly Phe Met Tyr  
 145 150 155 160  
 Val Pro Asn Glu Ala Ser Phe Ser Leu Val Tyr Met Arg Met Leu Glu  
 165 170 175  
 Leu Pro Glu Ser Leu Gln Glu Leu Val Ser Gly Leu Phe Asp Gly Thr  
 180 185 190  
 Pro Glu Ile Arg Asp Ala Leu Asn Gly Ser Asn Asp Asp Glu Lys Thr  
 195 200 205  
 Ser Ile Ile Val Ser Arg Arg Ala Ala Asp Val Val Thr Glu Asp Val  
 210 215 220  
 Lys Ala Asp Asp Val Pro Ile Ser Gly Glu Pro Tyr Ser Glu Lys Gln  
 225 230 235 240  
 Pro Arg Arg Arg Lys Lys Ser Asp His Ile Thr Leu Ser Asn Phe Val  
 245 250 255  
 Gln Ile Arg Thr Ile Pro Arg Val Met Asp Ile Trp Asp Pro Arg His  
 260 265 270



Lys Ala Thr Thr His Cys Ile Arg Ala Leu Ser Cys Ala Val Phe Phe  
 275 280 285

Ala Asp Glu Val Ile Phe Lys Ala Arg Lys Trp Pro Gly Leu Glu Asp  
 290 295 300

Glu Leu Asn Glu Ala Arg Glu Thr Ile Tyr Thr Ala Val Val Ala Val  
 305 310 315 320

Tyr Gly Glu Arg Gly Glu Leu Pro Phe Phe Gly His Ala Tyr Gly Arg  
 325 330 335

Asp Leu Thr Ser Cys Gln Arg Phe Val Ile Val Gln Tyr Ile Leu Ser  
 340 345 350

Arg Trp Glu Ala Phe Asn Cys Tyr Ala Val Ile Glu Asp Leu Thr Arg  
 355 360 365

Ser Tyr Val Asn Ala Leu Pro Ser Asp Asp Asp Thr Asp Gln Val Ala  
 370 375 380

Gln Asp Leu Ile Arg Thr Ile Val Asp Thr Ala Asn Ser Leu Leu Arg  
 385 390 395 400

Glu Val Gly Phe Ile Gly Thr Leu Ala Glu Thr Leu Leu Phe Leu Pro  
 405 410 415

Leu Pro Gln Leu Pro Cys Tyr Lys Glu Thr Ser His Leu Ala Lys Lys  
 420 425 430

Glu Gly Val Arg Ile Leu Arg Leu Ala Lys Thr Gly Val Gly Leu Ser  
 435 440 445

Asp Thr Val Pro Val Asp Val Ser Val Thr Glu Arg His Glu Tyr Glu  
 450 455 460

Ile Ser Arg Tyr Leu Asp Thr Leu Tyr Ser Gly Asp Pro Cys Tyr Asn  
 465 470 475 480

Gly Ala Val Arg Leu Cys Arg Leu Leu Gly Ser Ser Ile Pro Ile Ala  
 485 490 495

Leu Tyr Tyr Asn Thr Ile Ser Gly Asn Ala Phe Glu Pro Tyr Phe Ala  
 500 505 510



Gly Arg Arg Tyr Ile Ala Tyr Leu Gly Ala Leu Phe Phe Gly Arg Val  
515 520 525

His Gln Thr Pro Phe Gly Asp Gly Lys Lys Thr Gln Arg  
530 535 540

<210> 61  
<211> 258  
<212> PRT  
<213> Varicella zoster

<400> 61

Met Ser Ala Ser Arg Ile Arg Ala Lys Cys Phe Arg Leu Gly Gln Arg  
1 5 10 15

Cys His Thr Arg Phe Tyr Asp Val Leu Lys Lys Asp Ile Asp Asn Val  
20 25 30

Arg Arg Gly Phe Ala Asp Ala Phe Asn Pro Arg Leu Ala Lys Leu Leu  
35 40 45

Ser Pro Leu Ser His Val Asp Val Gln Arg Ala Val Arg Ile Ser Met  
50 55 60

Ser Phe Glu Val Asn Leu Gly Arg Arg Arg Pro Asp Cys Val Cys Ile  
65 70 75 80

Ile Gln Thr Glu Ser Ser Gly Ala Gly Lys Thr Val Cys Phe Ile Val  
85 90 95

Glu Leu Lys Ser Cys Arg Phe Ser Ala Asn Ile His Thr Pro Thr Lys  
100 105 110

Tyr His Gln Phe Cys Glu Gly Met Arg Gln Leu Arg Asp Thr Met Ala  
115 120 125

Leu Ile Lys Glu Thr Thr Pro Thr Gly Ser Asp Glu Ile Met Val Thr  
130 135 140

Pro Leu Leu Val Phe Val Ser Gln Arg Gly Leu Asn Leu Leu Gln Val  
145 150 155 160

Thr Arg Leu Pro Pro Lys Val Ile His Gly Asn Leu Val Met Leu Ala  
165 170 175



Ser His Leu Glu Asn Val Ala Glu Tyr Thr Pro Pro Ile Arg Ser Val  
180 185 190

Arg Glu Arg Arg Arg Leu Cys Lys Lys Lys Ile His Val Cys Ser Leu  
195 200 205

Ala Lys Lys Arg Ala Lys Ser Cys His Arg Ser Ala Leu Thr Lys Phe  
210 215 220

Glu Glu Asn Ala Ala Cys Gly Val Asp Leu Pro Leu Arg Arg Pro Ser  
225 230 235 240

Leu Gly Ala Cys Gly Gly Ile Leu Gln Ser Ile Thr Gly Met Phe Ser  
245 250 255

His Gly

<210> 62  
<211> 579  
<212> PRT  
<213> Varicella zoster  
<400> 62

Met Thr Ala Arg Tyr Gly Phe Gly Ser Ile Ser Phe Pro Asn Lys Cys  
1 5 10 15

Gly Ile Phe Leu Ser Thr Thr Lys Asn Phe Ile Ala Pro Asn Phe Pro  
20 25 30

Ile His Tyr Trp Thr Ala Pro Ala Phe Glu Leu Arg Gly Arg Met Asn  
35 40 45

Pro Asp Leu Glu Lys Asn Thr Leu Thr Leu Lys Asn Ala Ala Ala Val  
50 55 60

Ala Ala Leu Asp Asn Leu Arg Gly Glu Thr Ile Thr Leu Pro Thr Glu  
65 70 75 80

Ile Asp Arg Arg Leu Lys Pro Leu Glu Glu Gln Leu Thr Arg Met Ala  
85 90 95

Lys Val Leu Asp Ser Leu Glu Thr Ala Ala Ala Glu Ala Glu Glu Ala  
100 105 110



Asp Ala Gln Ser Glu Glu Cys Thr Arg Thr Glu Ile Ile Arg Asn Glu  
 115 120 125  
 Ser Ile His Pro Glu Val Gln Ile Ala Lys Asn Asp Ala Pro Leu Gln  
 130 135 140  
 Tyr Asp Thr Asn Phe Gln Val Asp Phe Ile Thr Leu Val Tyr Leu Gly  
 145 150 155 160  
 Arg Ala Arg Gly Asn Asn Ser Pro Gly Ile Val Phe Gly Pro Trp Tyr  
 165 170 175  
 Arg Thr Leu Gln Glu Arg Leu Val Leu Asp Arg Pro Val Ala Ala Arg  
 180 185 190  
 Gly Val Asp Cys Lys Asp Gly Arg Ile Ser Arg Thr Phe Met Asn Thr  
 195 200 205  
 Thr Val Thr Cys Leu Gln Ser Ala Gly Arg Met Tyr Val Gly Asp Arg  
 210 215 220  
 Ala Tyr Ser Ala Phe Glu Cys Ala Val Leu Cys Leu Tyr Leu Met Tyr  
 225 230 235 240  
 Arg Thr Ser Asn Ser Val His Glu Pro Gln Val Ser Ser Phe Gly Asn  
 245 250 255  
 Leu Ile Glu His Leu Pro Glu Tyr Thr Glu Thr Phe Val Asn Tyr Met  
 260 265 270  
 Thr Thr His Glu Asn Lys Asn Ser Tyr Gln Phe Cys Tyr Asp Arg Leu  
 275 280 285  
 Pro Arg Asp Gln Phe His Ala Arg Gly Gly Arg Tyr Asp Gln Gly Ala  
 290 295 300  
 Leu Thr Ser His Ser Val Met Asp Ala Leu Ile Arg Leu Gln Val Leu  
 305 310 315 320  
 Pro Pro Ala Pro Gly Gln Phe Asn Pro Gly Val Asn Asp Ile Ile Asp  
 325 330 335  
 Arg Asn His Thr Ala Tyr Val Asp Lys Ile Gln Gln Ala Ala Ala Ala  
 340 345 350



Tyr Leu Glu Arg Ala Gln Asn Val Phe Leu Met Glu Asp Gln Thr Leu  
 355 360 365

Leu Arg Leu Thr Ile Asp Thr Ile Thr Ala Leu Leu Leu Arg Arg  
 370 375 380

Leu Leu Trp Asn Gly Asn Val Tyr Gly Asp Lys Leu Lys Asn Asn Phe  
 385 390 395 400

Gln Leu Gly Leu Ile Val Ser Glu Ala Thr Gly Thr Pro Thr Asn Asn  
 405 410 415

Val Ile Leu Arg Gly Ala Thr Gly Phe Asp Gly Lys Phe Lys Ser Gly  
 420 425 430

Asn Asn Asn Phe Gln Phe Leu Cys Glu Arg Tyr Ile Ala Pro Leu Tyr  
 435 440 445

Thr Leu Asn Arg Thr Thr Glu Leu Thr Glu Met Phe Pro Gly Leu Val  
 450 455 460

Ala Leu Cys Leu Asp Ala His Thr Gln Leu Ser Arg Gly Ser Leu Gly  
 465 470 475 480

Arg Thr Val Ile Asp Ile Ser Ser Gly Gln Tyr Gln Asp Arg Leu Ile  
 485 490 495

Ser Leu Ile Ala Leu Glu Leu Glu His Arg Arg Gln Asn Val Thr Ser  
 500 505 510

Leu Pro Ile Ala Ala Val Val Ser Ile His Asp Ser Val Met Leu Gln  
 515 520 525

Tyr Glu Arg Gly Leu Gly Met Leu Met His Gln Pro Arg Val Arg Ala  
 530 535 540

Ala Leu Glu Glu Ser Arg Arg Leu Ala Gln Phe Asn Val Asn Ser Asp  
 545 550 555 560

Tyr Asp Leu Leu Tyr Phe Val Cys Leu Gly Val Ile Pro Gln Phe Ala  
 565 570 575

Ser Thr Pro



<210> 63  
<211> 605  
<212> PRT  
<213> Varicella zoster

<400> 63

Met Ala Ala Glu Ala Asp Glu Glu Asn Cys Glu Ala Leu Tyr Val Ala  
1 5 10 15

Gly Tyr Leu Ala Leu Tyr Ser Lys Asp Glu Gly Glu Leu Asn Ile Thr  
20 25 30

Pro Glu Ile Val Arg Ser Ala Leu Pro Pro Thr Ser Lys Ile Pro Ile  
35 40 45

Asn Ile Asp His Arg Lys Asp Cys Val Val Gly Glu Val Ile Ala Ile  
50 55 60

Ile Glu Asp Ile Arg Gly Pro Phe Phe Leu Gly Ile Val Arg Cys Pro  
65 70 75 80

Gln Leu His Ala Val Leu Phe Glu Ala Ala His Ser Asn Phe Phe Gly  
85 90 95

Asn Arg Asp Ser Val Leu Ser Pro Leu Glu Arg Ala Leu Tyr Leu Val  
100 105 110

Thr Asn Tyr Leu Pro Ser Val Ser Leu Ser Ser Lys Arg Leu Ser Pro  
115 120 125

Asn Glu Ile Pro Asp Gly Asn Phe Phe Thr His Val Ala Leu Cys Val  
130 135 140

Val Gly Arg Arg Val Gly Thr Val Val Asn Tyr Asp Cys Thr Pro Glu  
145 150 155 160

Ser Ser Ile Glu Pro Phe Arg Val Leu Ser Met Glu Ser Lys Ala Arg  
165 170 175

Leu Leu Ser Leu Val Lys Asp Tyr Ala Gly Leu Asn Lys Val Trp Lys  
180 185 190

Val Ser Glu Asp Lys Leu Ala Lys Val Leu Leu Ser Thr Ala Val Asn  
195 200 205

Asn Met Leu Leu Arg Asp Arg Trp Asp Val Val Ala Lys Arg Arg Arg  
385



210

215

220

Glu Ala Gly Ile Met Gly His Val Tyr Leu Gln Ala Ser Thr Gly Tyr  
 225 230 235 240

Gly Leu Ala Arg Ile Thr Asn Val Asn Gly Val Glu Ser Lys Leu Pro  
 245 250 255

Asn Ala Gly Val Ile Asn Ala Thr Phe His Pro Gly Gly Pro Ile Tyr  
 260 265 270

Asp Leu Ala Leu Gly Val Gly Glu Ser Asn Glu Asp Cys Glu Lys Thr  
 275 280 285

Val Pro His Leu Lys Val Thr Gln Leu Cys Arg Asn Asp Ser Asp Met  
 290 295 300

Ala Ser Val Ala Gly Asn Ala Ser Asn Ile Ser Pro Gln Pro Pro Ser  
 305 310 315 320

Gly Val Pro Thr Gly Gly Glu Phe Val Leu Ile Pro Thr Ala Tyr Tyr  
 325 330 335

Ser Gln Leu Leu Thr Gly Gln Thr Lys Asn Pro Gln Val Ser Ile Gly  
 340 345 350

Ala Pro Asn Asn Gly Gln Tyr Ile Val Gly Pro Tyr Gly Ser Pro His  
 355 360 365

Pro Pro Ala Phe Pro Pro Asn Thr Gly Gly Tyr Gly Cys Pro Pro Gly  
 370 375 380

His Phe Gly Gly Pro Tyr Gly Phe Pro Gly Tyr Pro Pro Pro Asn Arg  
 385 390 395 400

Leu Glu Met Gln Met Ser Ala Phe Met Asn Ala Leu Ala Ala Glu Arg  
 405 410 415

Gly Ile Asp Leu Gln Thr Pro Cys Val Asn Phe Pro Asp Lys Thr Asp  
 420 425 430

Val Arg Arg Pro Gly Lys Arg Asp Phe Lys Ser Met Asp Gln Arg Glu  
 435 440 445

Leu Asp Ser Phe Tyr Ser Gly Glu Ser Gln Met Asp Gly Glu Phe Pro  
 386



450

455

460

Ser Asn Ile Tyr Phe Pro Gly Glu Pro Thr Tyr Ile Thr His Arg Arg  
 465 470 475 480

Arg Arg Val Ser Pro Ser Tyr Trp Gln Arg Arg His Arg Val Ser Asn  
 485 490 495

Gly Gln His Glu Glu Leu Ala Gly Val Val Ala Lys Leu Gln Gln Glu  
 500 505 510

Val Thr Glu Leu Lys Ser Gln Asn Gly Thr Gln Met Pro Leu Ser His  
 515 520 525

His Thr Asn Ile Pro Glu Gly Thr Arg Asp Pro Arg Ile Ser Ile Leu  
 530 535 540

Leu Lys Gln Leu Gln Ser Val Ser Gly Leu Cys Ser Ser Gln Asn Thr  
 545 550 555 560

Thr Ser Thr Pro His Thr Asp Thr Val Gly Gln Asp Val Asn Ala Val  
 565 570 575

Glu Ala Ser Ser Lys Ala Pro Leu Ile Gln Gly Ser Thr Ala Asp Asp  
 580 585 590

Ala Asp Met Phe Ala Asn Gln Met Met Val Gly Arg Cys  
 595 600 605

<210> 64

<211> 1194

<212> PRT

<213> Varicella zoster

<400> 64

Met Ala Ile Arg Thr Gly Phe Cys Asn Pro Phe Leu Thr Gln Ala Ser  
 1 5 10 15

Gly Ile Lys Tyr Asn Pro Arg Thr Gly Arg Gly Ser Asn Arg Glu Phe  
 20 25 30

Leu His Ser Tyr Lys Thr Thr Met Ser Ser Phe Gln Phe Leu Ala Pro  
 35 40 45

Lys Cys Leu Asp Glu Asp Val Pro Met Glu Glu Arg Lys Gly Val His  
 50 55 60



Val Gly Thr Leu Ser Arg Pro Pro Lys Val Tyr Cys Asn Gly Lys Glu  
65 70 75 80

Val Pro Ile Leu Asp Phe Arg Cys Ser Ser Pro Trp Pro Arg Arg Val  
85 90 95

Asn Ile Trp Gly Glu Ile Asp Phe Arg Gly Asp Lys Phe Asp Pro Arg  
100 105 110

Phe Asn Thr Phe His Val Tyr Asp Ile Val Glu Thr Thr Glu Ala Ala  
115 120 125

Ser Asn Gly Asp Val Ser Arg Phe Ala Thr Ala Thr Arg Pro Leu Gly  
130 135 140

Thr Val Ile Thr Leu Leu Gly Met Ser Arg Cys Gly Lys Arg Val Ala  
145 150 155 160

Val His Val Tyr Gly Ile Cys Gln Tyr Phe Tyr Ile Asn Lys Ala Glu  
165 170 175

Val Asp Thr Ala Cys Gly Ile Arg Ser Gly Ser Glu Leu Ser Val Leu  
180 185 190

Leu Ala Glu Cys Leu Arg Ser Ser Met Ile Thr Gln Asn Asp Ala Thr  
195 200 205

Leu Asn Gly Asp Lys Asn Ala Phe His Gly Thr Ser Phe Lys Ser Ala  
210 215 220

Ser Pro Glu Ser Phe Arg Val Glu Val Ile Glu Arg Thr Asp Val Tyr  
225 230 235 240

Tyr Tyr Asp Thr Gln Pro Cys Ala Phe Tyr Arg Val Tyr Ser Pro Ser  
245 250 255

Ser Lys Phe Thr Asn Tyr Leu Cys Asp Asn Phe His Pro Glu Leu Lys  
260 265 270

Lys Tyr Glu Gly Arg Val Asp Ala Thr Thr Arg Phe Leu Met Asp Asn  
275 280 285

Pro Gly Phe Val Ser Phe Gly Trp Tyr Gln Leu Lys Pro Gly Val Asp  
290 295 300



Gly Glu Arg Val Arg Val Arg Pro Ala Ser Arg Gln Leu Thr Leu Ser  
 305 310 315 320

Asp Val Glu Ile Asp Cys Met Ser Asp Asn Leu Gln Ala Ile Pro Asn  
 325 330 335

Asp Asp Ser Trp Pro Asp Tyr Lys Leu Leu Cys Phe Asp Ile Glu Cys  
 340 345 350

Lys Ser Gly Gly Ser Asn Glu Leu Ala Phe Pro Asp Ala Thr His Leu  
 355 360 365

Glu Asp Leu Val Ile Gln Ile Ser Cys Leu Leu Tyr Ser Ile Pro Arg  
 370 375 380

Gln Ser Leu Glu His Ile Leu Leu Phe Ser Leu Gly Ser Cys Asp Leu  
 385 390 395 400

Pro Gln Arg Tyr Val Gln Glu Met Lys Asp Ala Gly Leu Pro Glu Pro  
 405 410 415

Thr Val Leu Glu Phe Asp Ser Glu Phe Glu Leu Leu Ile Ala Phe Met  
 420 425 430

Thr Leu Val Lys Gln Tyr Ala Pro Glu Phe Ala Thr Gly Tyr Asn Ile  
 435 440 445

Val Asn Phe Asp Trp Ala Phe Ile Met Glu Lys Leu Asn Ser Ile Tyr  
 450 455 460

Ser Leu Lys Leu Asp Gly Tyr Gly Ser Ile Asn Arg Gly Gly Leu Phe  
 465 470 475 480

Lys Ile Trp Asp Val Gly Lys Ser Gly Phe Gln Arg Arg Ser Lys Val  
 485 490 495

Lys Ile Asn Gly Leu Ile Ser Leu Asp Met Tyr Ala Ile Ala Thr Glu  
 500 505 510

Lys Leu Lys Leu Ser Ser Tyr Lys Leu Asp Ser Val Ala Arg Glu Ala  
 515 520 525

Leu Asn Glu Ser Lys Arg Asp Leu Pro Tyr Lys Asp Ile Pro Gly Tyr  
 530 535 540



Tyr Ala Ser Gly Pro Asn Thr Arg Gly Ile Ile Gly Glu Tyr Cys Ile  
 545 550 555 560

Gln Asp Ser Ala Leu Val Gly Lys Leu Phe Phe Lys Tyr Leu Pro His  
 565 570 575

Leu Glu Leu Ser Ala Val Ala Arg Leu Ala Arg Ile Thr Leu Thr Lys  
 580 585 590

Ala Ile Tyr Asp Gly Gln Gln Val Arg Ile Tyr Thr Cys Leu Leu Gly  
 595 600 605

Leu Ala Ser Ser Arg Gly Phe Ile Leu Pro Asp Gly Gly Tyr Pro Ala  
 610 615 620

Thr Phe Glu Tyr Lys Asp Val Ile Pro Asp Val Gly Asp Val Glu Glu  
 625 630 635 640

Glu Met Asp Glu Asp Glu Ser Val Ser Pro Thr Gly Thr Ser Ser Gly  
 645 650 655

Arg Asn Val Gly Tyr Lys Gly Ala Arg Val Phe Asp Pro Asp Thr Gly  
 660 665 670

Phe Tyr Ile Asp Pro Val Val Val Leu Asp Phe Ala Ser Leu Tyr Pro  
 675 680 685

Ser Ile Ile Gln Ala His Asn Leu Cys Phe Thr Thr Leu Thr Leu Asn  
 690 695 700

Phe Glu Thr Val Lys Arg Leu Asn Pro Ser Asp Tyr Ala Thr Phe Thr  
 705 710 715 720

Val Gly Gly Lys Arg Leu Phe Phe Val Arg Ser Asn Val Arg Glu Ser  
 725 730 735

Leu Leu Gly Val Leu Leu Lys Asp Trp Leu Ala Met Arg Lys Ala Ile  
 740 745 750

Arg Ala Arg Ile Pro Gly Ser Ser Ser Asp Glu Ala Val Leu Leu Asp  
 755 760 765

Lys Gln Gln Ala Ala Ile Lys Val Val Cys Asn Ser Val Tyr Gly Phe  
 770 775 780



Thr Gly Val Ala Gln Gly Phe Leu Pro Cys Leu Tyr Val Ala Ala Thr  
785 790 795 800

Val Thr Thr Ile Gly Arg Gln Met Leu Leu Ser Thr Arg Asp Tyr Ile  
805 810 815

His Asn Asn Trp Ala Ala Phe Glu Arg Phe Ile Thr Ala Phe Pro Asp  
820 825 830

Ile Glu Ser Ser Val Leu Ser Gln Lys Ala Tyr Glu Val Lys Val Ile  
835 840 845

Tyr Gly Asp Thr Asp Ser Val Phe Ile Arg Phe Lys Gly Val Ser Val  
850 855 860

Glu Gly Ile Ala Lys Ile Gly Glu Lys Met Ala His Ile Ile Ser Thr  
865 870 875 880

Ala Leu Phe Cys Pro Pro Ile Lys Leu Glu Cys Glu Lys Thr Phe Ile  
885 890 895

Lys Leu Leu Leu Ile Thr Lys Lys Lys Tyr Ile Gly Val Ile Tyr Gly  
900 905 910

Gly Lys Val Leu Met Lys Gly Val Asp Leu Val Arg Lys Asn Asn Cys  
915 920 925

Gln Phe Ile Asn Asp Tyr Ala Arg Lys Leu Val Glu Leu Leu Leu Tyr  
930 935 940

Asp Asp Thr Val Ser Arg Ala Ala Ala Glu Ala Ser Cys Val Ser Ile  
945 950 955 960

Ala Glu Trp Asn Arg Arg Ala Met Pro Ser Gly Met Ala Gly Phe Gly  
965 970 975

Arg Ile Ile Ala Asp Ala His Arg Gln Ile Thr Ser Pro Lys Leu Asp  
980 985 990

Ile Asn Lys Phe Val Met Thr Ala Glu Leu Ser Arg Pro Pro Ser Ala  
995 1000 1005

Tyr Ile Asn Arg Arg Leu Ala His Leu Thr Val Tyr Tyr Lys Leu  
1010 1015 1020



Val	Met	Arg	Gln	Gly	Gln	Ile	Pro	Asn	Val	Arg	Glu	Arg	Ile	Pro	
	1025					1030					1035				
Tyr	Val	Ile	Val	Ala	Pro	Thr	Asp	Glu	Val	Glu	Ala	Asp	Ala	Lys	
	1040					1045					1050				
Ser	Val	Ala	Leu	Leu	Arg	Gly	Asp	Pro	Leu	Gln	Asn	Thr	Ala	Gly	
	1055					1060					1065				
Lys	Arg	Cys	Gly	Glu	Ala	Lys	Arg	Lys	Leu	Ile	Ile	Ser	Asp	Leu	
	1070					1075					1080				
Ala	Glu	Asp	Pro	Ile	His	Val	Thr	Ser	His	Gly	Leu	Ser	Leu	Asn	
	1085					1090					1095				
Ile	Asp	Tyr	Tyr	Phe	Ser	His	Leu	Ile	Gly	Thr	Ala	Ser	Val	Thr	
	1100					1105					1110				
Phe	Lys	Ala	Leu	Phe	Gly	Asn	Asp	Thr	Lys	Leu	Thr	Glu	Arg	Leu	
	1115					1120					1125				
Leu	Lys	Arg	Phe	Ile	Pro	Glu	Thr	Arg	Val	Val	Asn	Val	Lys	Met	
	1130					1135					1140				
Leu	Asn	Arg	Leu	Gln	Ala	Ala	Gly	Phe	Val	Cys	Ile	His	Ala	Pro	
	1145					1150					1155				
Cys	Trp	Asp	Asn	Lys	Met	Asn	Thr	Glu	Ala	Glu	Ile	Thr	Glu	Glu	
	1160					1165					1170				
Glu	Gln	Ser	His	Gln	Ile	Met	Arg	Arg	Val	Phe	Cys	Ile	Pro	Lys	
	1175					1180					1185				
Ala	Ile	Leu	His	Gln	Ser										
	1190														
<210>	65														
<211>	156														
<212>	PRT														
<213>	Varicella zoster														
<400>	65														
Met	Tyr	Glu	Ser	Glu	Asn	Ala	Ser	Glu	His	His	Pro	Glu	Leu	Glu	Asp
1				5				10					15		



Val Phe Ser Glu Asn Thr Gly Asp Ser Asn Pro Ser Met Gly Ser Ser  
20 25 30

Asp Ser Thr Arg Ser Ile Ser Gly Met Arg Ala Arg Asp Leu Ile Thr  
35 40 45

Asp Thr Asp Val Asn Leu Leu Asn Ile Asp Ala Leu Glu Ser Lys Tyr  
50 55 60

Phe Pro Ala Asp Ser Thr Phe Thr Leu Ser Val Trp Phe Glu Asn Leu  
65 70 75 80

Ile Pro Pro Glu Ile Glu Ala Ile Leu Pro Thr Thr Asp Ala Gln Leu  
85 90 95

Asn Tyr Ile Ser Phe Thr Ser Arg Leu Ala Ser Val Leu Lys His Lys  
100 105 110

Glu Ser Asn Asp Ser Glu Lys Ser Ala Tyr Val Val Pro Cys Glu His  
115 120 125

Ser Ala Ser Val Thr Arg Arg Arg Glu Arg Phe Ala Gly Val Met Ala  
130 135 140

Lys Phe Leu Asp Leu His Glu Ile Leu Lys Asp Ala  
145 150 155

<210> 66  
<211> 269  
<212> PRT  
<213> Varicella zoster

<400> 66

Met Ser Arg Arg Thr Tyr Val Arg Ser Glu Arg Arg Arg Gly Cys Gly  
1 5 10 15

Asp Asn Leu Leu Gln Arg Ile Arg Leu Val Val Pro Ser Ala Leu Gln  
20 25 30

Cys Cys Asp Gly Asp Leu Pro Ile Phe Asp Pro Gln Arg Pro Pro Ala  
35 40 45

Arg Cys Val Phe Gln Phe Asn Gly Glu Asp Asn Val Ser Glu Ala Phe  
50 55 60



Pro Val Glu Tyr Ile Met Arg Leu Met Ala Asn Trp Ala Gln Val Asp  
65 70 75 80

Cys Asp Pro Tyr Ile Lys Ile Gln Asn Thr Gly Val Ser Val Leu Phe  
85 90 95

Gln Gly Phe Phe Phe Arg Pro Thr Asn Ala Pro Val Ala Glu Val Ser  
100 105 110

Ile Asp Ser Asn Asn Val Ile Leu Ser Ser Thr Leu Ser Thr Gly Ile  
115 120 125

Asn Leu Ser Ala Leu Glu Ser Ile Lys Arg Gly Gly Gly Ile Asp Arg  
130 135 140

Arg Pro Leu Gln Ala Leu Met Trp Val Asn Cys Phe Val Arg Met Pro  
145 150 155 160

Tyr Val Gln Leu Ser Phe Arg Phe Met Gly Pro Glu Asp Pro Ser Arg  
165 170 175

Thr Ile Lys Leu Met Ala Arg Ala Thr Asp Ala Tyr Met Tyr Lys Glu  
180 185 190

Thr Gly Asn Asn Leu Asp Glu Tyr Ile Arg Trp Arg Pro Ser Phe Arg  
195 200 205

Ser Pro Pro Glu Asn Gly Ser Pro Asn Thr Ser Val Gln Met Gln Ser  
210 215 220

Asp Ile Lys Pro Ala Leu Pro Asp Thr Gln Thr Thr Arg Val Trp Lys  
225 230 235 240

Leu Ala Leu Pro Val Ala Asn Val Thr Tyr Ala Leu Phe Ile Val Ile  
245 250 255

Val Leu Val Val Val Leu Gly Ala Val Leu Phe Trp Lys  
260 265

<210> 67

<211> 235

<212> PRT

<213> Varicella zoster

<400> 67

Met Thr Gln Pro Ala Ser Ser Arg Val Val Phe Asp Pro Ser Asn Pro



1	5	10	15
Thr Thr Phe Ser Val Glu Ala Ile Ala Ala Tyr Thr Pro Val Ala Leu	20	25	30
Ile Arg Leu Leu Asn Ala Ser Gly Pro Leu Gln Pro Gly His Arg Val	35	40	45
Asp Ile Ala Asp Ala Arg Ser Ile Tyr Thr Val Gly Ala Ala Ala Ser	50	55	60
Ala Ala Arg Ala Arg Ala Asn His Asn Ala Asn Thr Ile Arg Arg Thr	65	70	75
Ala Met Phe Ala Glu Thr Asp Pro Met Thr Trp Leu Arg Pro Thr Val	85	90	95
Gly Leu Lys Arg Thr Phe Asn Pro Arg Ile Ile Arg Pro Gln Pro Pro	100	105	110
Asn Pro Ser Met Ser Leu Gly Ile Ser Gly Pro Thr Ile Leu Pro Gln	115	120	125
Lys Thr Gln Ser Ala Asp Gln Ser Ala Leu Gln Gln Pro Ala Ala Leu	130	135	140
Ala Phe Ser Gly Ser Ser Pro Gln His Pro Pro Pro Gln Thr Thr Ser	145	150	155
Ala Ser Val Gly Gln Gln Gln His Val Val Ser Gly Ser Ser Gly Gln	165	170	175
Gln Pro Gln Gln Gly Ala Gln Ser Ser Thr Val Gln Pro Thr Thr Gly	180	185	190
Ser Pro Pro Ala Ala Gln Gly Val Pro Gln Ser Thr Pro Pro Pro Thr	195	200	205
Gln Asn Thr Pro Gln Gly Gly Lys Gly Gln Thr Leu Ser His Thr Gly	210	215	220
Gln Ser Gly Asn Ala Ser Arg Ser Arg Arg Val	225	230	235

<210> 68



<211> 483  
 <212> PRT  
 <213> Varicella zoster

<400> 68

Met Gly Ser Gln Pro Thr Asn Ser His Phe Thr Leu Asn Glu Gln Thr  
 1 5 10 15

Leu Cys Gly Thr Asn Ile Ser Leu Leu Gly Asn Asn Arg Phe Ile Gln  
 20 25 30

Ile Gly Asn Gly Leu His Met Thr Tyr Ala Pro Gly Phe Phe Gly Asn  
 35 40 45

Trp Ser Arg Asp Leu Thr Ile Gly Pro Arg Phe Gly Gly Leu Asn Lys  
 50 55 60

Gln Pro Ile His Val Pro Pro Lys Arg Thr Glu Thr Ala Ser Ile Gln  
 65 70 75 80

Val Thr Pro Arg Ser Ile Val Ile Asn Arg Met Asn Asn Ile Gln Ile  
 85 90 95

Asn Pro Thr Ser Ile Gly Asn Pro Gln Val Thr Ile Arg Leu Pro Leu  
 100 105 110

Asn Asn Phe Lys Ser Thr Thr Gln Leu Ile Gln Gln Val Ser Leu Thr  
 115 120 125

Asp Phe Phe Arg Pro Asp Ile Glu His Ala Gly Ser Ile Val Leu Ile  
 130 135 140

Leu Arg His Pro Ser Asp Met Ile Gly Glu Ala Asn Thr Leu Thr Gln  
 145 150 155 160

Ala Gly Arg Asp Pro Asp Val Leu Leu Glu Gly Leu Arg Asn Leu Phe  
 165 170 175

Asn Ala Cys Thr Ala Pro Trp Thr Val Gly Glu Gly Gly Gly Leu Arg  
 180 185 190

Ala Tyr Val Thr Ser Leu Ser Phe Ile Ala Ala Cys Arg Ala Glu Glu  
 195 200 205

Tyr Thr Asp Lys Gln Ala Ala Asp Ala Asn Arg Thr Ala Ile Val Ser  
 210 215 220



Ala Tyr Gly Cys Ser Arg Met Glu Thr Arg Leu Ile Arg Phe Ser Glu  
 225 230 235 240

Cys Leu Arg Ala Met Val Gln Cys His Val Phe Pro His Arg Phe Ile  
 245 250 255

Ser Phe Phe Gly Ser Leu Leu Glu Tyr Thr Ile Gln Asp Asn Leu Cys  
 260 265 270

Asn Ile Thr Ala Val Ala Lys Gly Pro Gln Glu Ala Ala Arg Thr Asp  
 275 280 285

Lys Thr Ser Thr Arg Arg Val Thr Ala Asn Ile Pro Ala Cys Val Phe  
 290 295 300

Trp Asp Val Asp Lys Asp Leu His Leu Ser Ala Asp Gly Leu Lys His  
 305 310 315 320

Val Phe Leu Val Phe Val Tyr Thr Gln Arg Arg Gln Arg Glu Gly Val  
 325 330 335

Arg Leu His Leu Ala Leu Ser Gln Leu Asn Glu Gln Cys Phe Gly Arg  
 340 345 350

Gly Ile Gly Phe Leu Leu Gly Arg Ile Arg Ala Glu Asn Ala Ala Trp  
 355 360 365

Gly Thr Glu Gly Val Ala Asn Thr His Gln Pro Tyr Asn Thr Arg Ala  
 370 375 380

Leu Pro Leu Val Gln Leu Ser Asn Asp Pro Thr Ser Pro Arg Cys Ser  
 385 390 395 400

Ile Gly Glu Ile Thr Gly Val Asn Trp Asn Leu Ala Arg Gln Arg Leu  
 405 410 415

Tyr Gln Trp Thr Gly Asp Phe Arg Gly Leu Pro Thr Gln Leu Ser Cys  
 420 425 430

Met Tyr Ala Ala Tyr Thr Leu Ile Gly Thr Ile Pro Ser Glu Ser Val  
 435 440 445

Arg Tyr Thr Arg Arg Met Glu Arg Phe Gly Gly Tyr Asn Val Pro Thr  
 450 455 460



Ile Trp Leu Glu Gly Val Val Trp Gly Gly Thr Asn Thr Trp Asn Glu  
 465 470 475 480

Cys Tyr Tyr

<210> 69  
 <211> 775  
 <212> PRT  
 <213> Varicella zoster

<400> 69

Met Glu Phe Lys Arg Ile Phe Asn Thr Val His Asp Ile Ile Asn Arg  
 1 5 10 15

Leu Cys Gln His Gly Tyr Lys Glu Tyr Ile Ile Pro Pro Glu Ser Thr  
 20 25 30

Thr Pro Val Glu Leu Met Glu Tyr Ile Ser Thr Ile Val Ser Lys Leu  
 35 40 45

Lys Ala Val Thr Arg Gln Asp Glu Arg Val Tyr Arg Cys Cys Gly Glu  
 50 55 60

Leu Ile His Cys Arg Ile Asn Leu Arg Ser Val Ser Met Glu Thr Trp  
 65 70 75 80

Leu Thr Ser Pro Ile Leu Cys Leu Thr Pro Arg Val Arg Gln Ala Ile  
 85 90 95

Glu Gly Arg Arg Asp Glu Ile Arg Arg Ala Ile Leu Glu Pro Phe Leu  
 100 105 110

Lys Asp Gln Tyr Pro Ala Leu Ala Thr Leu Gly Leu Gln Ser Ala Leu  
 115 120 125

Lys Tyr Glu Asp Phe Tyr Leu Thr Lys Leu Glu Glu Gly Lys Leu Glu  
 130 135 140

Ser Leu Cys Gln Phe Phe Leu Arg Leu Ala Ala Thr Val Thr Thr Glu  
 145 150 155 160

Ile Val Asn Leu Pro Lys Ile Ala Thr Leu Ile Pro Gly Ile Asn Asp  
 165 170 175



Gly Tyr Thr Trp Thr Asp Val Cys Arg Val Phe Phe Thr Ala Leu Ala  
180 185 190

Cys Gln Lys Ile Val Pro Ala Thr Pro Val Met Met Phe Leu Gly Arg  
195 200 205

Glu Thr Gly Ala Thr Ala Ser Cys Tyr Leu Met Asp Pro Glu Ser Ile  
210 215 220

Thr Val Gly Arg Ala Val Arg Ala Ile Thr Gly Asp Val Gly Thr Val  
225 230 235 240

Leu Gln Ser Arg Gly Gly Val Gly Ile Ser Leu Gln Ser Leu Asn Leu  
245 250 255

Ile Pro Thr Glu Asn Gln Thr Lys Gly Leu Leu Ala Val Leu Lys Leu  
260 265 270

Leu Asp Cys Met Val Met Ala Ile Asn Ser Asp Cys Glu Arg Pro Thr  
275 280 285

Gly Val Cys Val Tyr Ile Glu Pro Trp His Val Asp Leu Gln Thr Val  
290 295 300

Leu Ala Thr Arg Gly Met Leu Val Arg Asp Glu Ile Phe Arg Cys Asp  
305 310 315 320

Asn Ile Phe Cys Cys Leu Trp Thr Pro Asp Leu Phe Phe Glu Arg Tyr  
325 330 335

Leu Ser Tyr Leu Lys Gly Ala Ser Asn Val Gln Trp Thr Leu Phe Asp  
340 345 350

Asn Arg Ala Asp Ile Leu Arg Thr Leu His Gly Glu Ala Phe Thr Ser  
355 360 365

Thr Tyr Leu Arg Leu Glu Arg Glu Gly Leu Gly Val Ser Ser Val Pro  
370 375 380

Ile Gln Asp Ile Ala Phe Thr Ile Ile Arg Ser Ala Ala Val Thr Gly  
385 390 395 400

Ser Pro Phe Leu Met Phe Lys Asp Ala Cys Asn Arg Asn Tyr His Met  
405 410 415



Asn Thr Gln Gly Asn Ala Ile Thr Gly Ser Asn Leu Cys Thr Glu Ile  
420 425 430

Val Gln Lys Ala Asp Ala His Gln His Gly Val Cys Asn Leu Ala Ser  
435 440 445

Ile Asn Leu Thr Thr Cys Leu Ser Lys Gly Pro Val Ser Phe Asn Leu  
450 455 460

Asn Asp Leu Gln Leu Thr Ala Arg Thr Thr Val Ile Phe Leu Asn Gly  
465 470 475 480

Val Leu Ala Ala Gly Asn Phe Pro Cys Lys Lys Ser Cys Lys Gly Val  
485 490 495

Lys Asn Asn Arg Ser Leu Gly Ile Gly Ile Gln Gly Leu His Thr Thr  
500 505 510

Cys Leu Arg Leu Gly Phe Asp Leu Thr Ser Gln Pro Ala Arg Arg Leu  
515 520 525

Asn Val Gln Ile Ala Glu Leu Met Leu Tyr Glu Thr Met Lys Thr Ser  
530 535 540

Met Glu Met Cys Lys Ile Gly Gly Leu Ala Pro Phe Lys Gly Phe Thr  
545 550 555 560

Glu Ser Lys Tyr Ala Lys Gly Trp Leu His Gln Asp Gly Phe Ser Thr  
565 570 575

Ile Ser Tyr Leu Asp Leu Pro Trp Cys Thr Leu Arg Asp Asp Ile Cys  
580 585 590

Ala Tyr Gly Leu Tyr Asn Ser Gln Phe Leu Ala Leu Met Pro Thr Val  
595 600 605

Ser Ser Ala Gln Val Thr Glu Cys Ser Glu Gly Phe Ser Pro Ile Tyr  
610 615 620

Asn Asn Met Phe Ser Lys Val Thr Thr Ser Gly Glu Leu Leu Arg Pro  
625 630 635 640

Asn Leu Asp Leu Met Asp Glu Leu Arg Asp Met Tyr Ser Cys Glu Glu  
645 650 655



Lys Arg Leu Glu Val Ile Asn Ile Leu Glu Lys Asn Gln Trp Ser Val  
660 665 670

Ile Arg Ser Phe Gly Cys Leu Ser Asn Ser His Pro Leu Leu Lys Tyr  
675 680 685

Lys Thr Ala Phe Glu Tyr Glu Gln Glu Asp Leu Val Asp Met Cys Ala  
690 695 700

Glu Arg Ala Pro Phe Ile Asp Gln Ser Gln Ser Met Thr Leu Phe Ile  
705 710 715 720

Glu Glu Arg Pro Asp Gly Thr Ile Pro Ala Ser Lys Ile Met Asn Leu  
725 730 735

Leu Ile Arg Ala Tyr Lys Ala Gly Leu Lys Thr Gly Met Tyr Tyr Cys  
740 745 750

Lys Ile Arg Lys Ala Thr Asn Ser Gly Leu Phe Ala Gly Gly Glu Leu  
755 760 765

Thr Cys Thr Ser Cys Ala Leu  
770 775

<210> 70

<211> 306

<212> PRT

<213> Varicella zoster

<400> 70

Met Asp Gln Lys Asp Cys Ser His Phe Phe Tyr Arg Pro Glu Cys Pro  
1 5 10 15

Asp Ile Asn Asn Leu Arg Ala Leu Ser Ile Ser Asn Arg Trp Leu Glu  
20 25 30

Ser Asp Phe Ile Ile Glu Asp Asp Tyr Gln Tyr Leu Asp Cys Leu Thr  
35 40 45

Glu Asp Glu Leu Ile Phe Tyr Arg Phe Ile Phe Thr Phe Leu Ser Ala  
50 55 60

Ala Asp Asp Leu Val Asn Val Asn Leu Gly Ser Leu Thr Gln Leu Phe  
65 70 75 80



Ser Gln Lys Asp Ile His His Tyr Tyr Ile Glu Gln Glu Cys Ile Glu  
 85 90 95  
 Val Val His Ala Arg Val Tyr Ser Gln Ile Gln Leu Met Leu Phe Arg  
 100 105 110  
 Gly Asp Glu Ser Leu Arg Val Gln Tyr Val Asn Val Thr Ile Asn Asn  
 115 120 125  
 Pro Ser Ile Gln Gln Lys Val Gln Trp Leu Glu Glu Lys Val Arg Asp  
 130 135 140  
 Asn Pro Ser Val Ala Glu Lys Tyr Ile Leu Met Ile Leu Ile Glu Gly  
 145 150 155 160  
 Ile Phe Phe Val Ser Ser Phe Ala Ala Ile Ala Tyr Leu Arg Asn Asn  
 165 170 175  
 Gly Leu Phe Val Val Thr Cys Gln Phe Asn Asp Leu Ile Ser Arg Asp  
 180 185 190  
 Glu Ala Ile His Thr Ser Ala Ser Cys Cys Ile Tyr Asn Asn Tyr Val  
 195 200 205  
 Pro Glu Lys Pro Ala Ile Thr Arg Ile His Gln Leu Phe Ser Glu Ala  
 210 215 220  
 Val Glu Ile Glu Cys Ala Phe Leu Lys Ser His Ala Pro Lys Thr Arg  
 225 230 235 240  
 Leu Val Asn Val Asp Ala Ile Thr Gln Tyr Val Lys Phe Ser Ala Asp  
 245 250 255  
 Arg Leu Leu Ser Ala Ile Asn Val Pro Lys Leu Phe Asn Thr Pro Pro  
 260 265 270  
 Pro Asp Ser Asp Phe Pro Leu Ala Phe Met Ile Ala Asp Lys Asn Thr  
 275 280 285  
 Asn Phe Phe Glu Arg His Ser Thr Ser Tyr Ala Gly Thr Val Ile Asn  
 290 295 300  
 Asp Leu  
 305



<210> 71  
<211> 408  
<212> PRT  
<213> Varicella zoster

<400> 71

Met Asp Leu Arg Ser Arg Thr Asp Asp Ala Leu Asp Met Glu Leu His  
1 5 10 15

Ala Gly Phe Asp Ala Pro Glu Ile Ala Arg Ala Val Leu Thr Glu Lys  
20 25 30

Thr Leu Thr Gly Leu Ile Ser Ser Ile Ser Pro Leu Val Asn Arg Leu  
35 40 45

Arg Asp Ser Ile Leu Ile Phe Ser Asp Glu Gly Leu Ile Ile His Cys  
50 55 60

Ser Leu Glu Thr Glu Gln Leu Tyr Ile Pro Ile Pro Ala Asn Met Phe  
65 70 75 80

Asp Gln Tyr Asn Trp Thr Gly Pro Arg Met Val Val Leu Ala Ala Thr  
85 90 95

Glu Gly Arg Ser Ser Leu Ile Asp Ala Phe Arg His Thr Lys Asp Pro  
100 105 110

Ser Thr Pro Thr Arg Leu Tyr Phe Lys Phe Thr Gly Gln Pro Pro Glu  
115 120 125

Arg Ser Ile Ile Gln Thr Met Val Trp Gln Arg Pro Gly Asp Cys Gly  
130 135 140

Pro Asp Asp Gln Val Gln Cys Tyr Lys Gln Val Val Lys Arg Glu Leu  
145 150 155 160

Ala Cys Tyr Thr Met Met Phe Pro Asn Leu Thr Pro Asp Ile Ser Ile  
165 170 175

Cys Leu Lys Arg Asp Gln Phe Thr Arg Leu Gln Arg Leu Leu Lys Thr  
180 185 190

Phe Gly Phe Thr Thr Cys Phe Ile Leu Thr Ala Thr Asp Met Tyr Ile  
195 200 205

Gln Thr Ala Gly Gly Gly Phe Ile Ser Phe Asn Val Ser Leu Asp Ile  
403



210

215

220

Asn Gly Ser Lys Pro Thr Pro Tyr Asn Leu Ile Arg Ser Ile Thr Asn  
 225 230 235 240

Ser Lys Arg Ile Leu Asn Asn Val Val Tyr Gly Ser Gly Ser Met Arg  
 245 250 255

Glu Phe Gly Val Leu Leu Glu Thr His Ser Gly Phe Arg Ser Ala Val  
 260 265 270

Gln Asn Leu Lys Leu Thr Arg Asp Glu Thr Cys Tyr Ile Asn Phe Tyr  
 275 280 285

Leu Ala Leu Thr Asn Ser Pro Met Val Gly Leu Tyr Ile Gln Arg Ser  
 290 295 300

Ala Pro Val His Ser Phe Phe Tyr Ala Thr Phe Leu Ser Pro Lys Asp  
 305 310 315 320

Leu Lys Glu Lys Leu Thr Ser Met Gln Leu Phe Ala Asn Met Glu Ser  
 325 330 335

Val Lys Asp Glu Pro Pro Leu Lys Lys Arg Arg Asn Leu Leu Thr Lys  
 340 345 350

Arg Asn Glu Lys Asn Thr Gly Asn Lys Met Gly Gly Lys Leu Pro Glu  
 355 360 365

Thr Thr Trp Gln Glu Gly Ile Gly Ile Arg Glu Tyr Cys Val Ala Pro  
 370 375 380

Pro Val Asp Pro Ala Gly Thr Leu Asp Tyr Ser Glu Leu Ser Arg Glu  
 385 390 395 400

Ser Asp Val Ile Cys Thr Val Lys  
 405

<210> 72

<211> 406

<212> PRT

<213> Varicella zoster

<400> 72

Met Ala Val Asn Gly Glu Arg Ala Val His Asp Glu Asn Leu Gly Val  
 1 5 10 15



Leu Asp Arg Glu Leu Ile Arg Ala Gln Ser Ile Gln Gly Cys Val Gly  
 20 25 30

Asn Pro Gln Glu Cys Asn Ser Cys Ala Ile Thr Ser Ala Ser Arg Leu  
 35 40 45

Phe Leu Val Gly Leu Gln Ala Ser Val Ile Thr Ser Gly Leu Ile Leu  
 50 55 60

Gln Tyr His Val Cys Glu Ala Ala Val Asn Ala Thr Ile Met Gly Leu  
 65 70 75 80

Ile Val Val Ser Gly Leu Trp Pro Thr Ser Val Lys Phe Leu Arg Thr  
 85 90 95

Leu Ala Lys Leu Gly Arg Cys Leu Gln Thr Val Val Val Leu Gly Phe  
 100 105 110

Ala Val Leu Trp Ala Val Gly Cys Pro Ile Ser Arg Asp Leu Pro Phe  
 115 120 125

Val Glu Leu Leu Gly Ile Ser Ile Ser Ala Ile Thr Gly Thr Val Ala  
 130 135 140

Ala Val His Ile His Tyr Tyr Asn Phe Val Thr Thr Phe Asn Gly Pro  
 145 150 155 160

His Ile Tyr Phe Tyr Val Met Met Leu Gly Thr Gly Leu Gly Gly Leu  
 165 170 175

Leu Thr Val Ile Leu Tyr Met Tyr Val Ser Lys Tyr Glu Val Leu Ile  
 180 185 190

Gly Leu Cys Ile Ser Ile Val Thr Leu Val Ser Ile Val Asp Ala Ala  
 195 200 205

Thr Asp Leu Gln Asp Thr Cys Ile Tyr Arg Lys Asn Arg His Lys Gln  
 210 215 220

Leu Asn Thr Tyr Thr Asp Leu Gly Phe Ala Val Val Tyr Thr Gln Asn  
 225 230 235 240

Asp Arg Gly Arg Val Cys Asp His Arg Glu Ser Ser Arg Thr Leu Lys  
 245 250 255



Arg Val Phe Lys Gly Ile Arg Ile Met Ser Val Ile Pro Pro Val Leu  
260 265 270

Tyr Ile Val Thr Pro Leu Met Trp Ala Ile Ser His Ile Ile Lys Leu  
275 280 285

Asn His Phe Ile Lys Leu Thr Gln Val Thr Leu Ala Val Ser Ile Gly  
290 295 300

Gly His Ile Ile Ala Phe Gly Leu Gln Gly Phe Ala Val Leu Tyr Gln  
305 310 315 320

Glu Lys Lys Asn Leu Trp Val Ile Val Leu Tyr Thr Thr Thr Ser Val  
325 330 335

Thr Gly Ile Ala Val Thr Phe Ala Gly Ile Ser Trp Gly Ala Ile Ile  
340 345 350

Ile Leu Thr Ser Thr Val Ala Ala Gly Leu Thr Cys Ile Gln Met Met  
355 360 365

Arg Leu Ser Val Lys Pro Ile Asp Cys Phe Met Ala Ser His Ile Thr  
370 375 380

Lys Val Tyr His Val Cys Val Tyr Ile Ile Ile Asn Leu Cys Tyr Leu  
385 390 395 400

Cys Gly Thr Tyr Val Ser  
405

<210> 73  
<211> 560  
<212> PRT  
<213> Varicella zoster

<400> 73

Met Lys Arg Ile Gln Ile Asn Leu Ile Leu Thr Ile Ala Cys Ile Gln  
1 5 10 15

Leu Ser Thr Glu Ser Gln Pro Thr Pro Val Ser Ile Thr Glu Leu Tyr  
20 25 30

Thr Ser Ala Ala Thr Arg Lys Pro Asp Pro Ala Val Ala Pro Thr Ser  
35 40 45



Ala Ala Ser Arg Lys Pro Asp Pro Ala Val Ala Pro Thr Ser Ala Ala  
 50 55 60

Ser Arg Lys Pro Asp Pro Ala Val Ala Pro Thr Ser Ala Ala Ser Arg  
 65 70 75 80

Lys Pro Asp Pro Ala Val Ala Pro Thr Ser Ala Ala Thr Arg Lys Pro  
 85 90 95

Asp Pro Ala Val Ala Pro Thr Ser Ala Ala Ser Arg Lys Pro Asp Pro  
 100 105 110

Ala Val Ala Pro Thr Ser Ala Ala Thr Arg Lys Pro Asp Pro Ala Val  
 115 120 125

Ala Pro Thr Ser Ala Ala Ser Arg Lys Pro Asp Pro Ala Ala Asn Thr  
 130 135 140

Gln His Ser Gln Pro Pro Phe Leu Tyr Glu Asn Ile Gln Cys Val His  
 145 150 155 160

Gly Gly Ile Gln Ser Ile Pro Tyr Phe His Thr Phe Ile Met Pro Cys  
 165 170 175

Tyr Met Arg Leu Thr Thr Gly Gln Gln Ala Ala Phe Lys Gln Gln Gln  
 180 185 190

Lys Thr Tyr Glu Gln Tyr Ser Leu Asp Pro Glu Gly Ser Asn Ile Thr  
 195 200 205

Arg Trp Lys Ser Leu Ile Arg Pro Asp Leu His Ile Glu Val Trp Phe  
 210 215 220

Thr Arg His Leu Ile Asp Pro His Arg Gln Leu Gly Asn Ala Leu Ile  
 225 230 235 240

Arg Met Pro Asp Leu Pro Val Met Leu Tyr Ser Asn Ser Ala Asp Leu  
 245 250 255

Asn Leu Ile Asn Asn Pro Glu Ile Phe Thr His Ala Lys Glu Asn Tyr  
 260 265 270

Val Ile Pro Asp Val Lys Thr Thr Ser Asp Phe Ser Val Thr Ile Leu  
 275 280 285



Ser Met Asp Ala Thr Thr Glu Gly Thr Tyr Ile Trp Arg Val Val Asn  
 290 295 300

Thr Lys Thr Lys Asn Val Ile Ser Glu His Ser Ile Thr Val Thr Thr  
 305 310 315 320

Tyr Tyr Arg Pro Asn Ile Thr Val Val Gly Asp Pro Val Leu Thr Gly  
 325 330 335

Gln Thr Tyr Ala Ala Tyr Cys Asn Val Ser Lys Tyr Tyr Pro Pro His  
 340 345 350

Ser Val Arg Val Arg Trp Thr Ser Arg Phe Gly Asn Ile Gly Lys Asn  
 355 360 365

Phe Ile Thr Asp Ala Ile Gln Glu Tyr Ala Asn Gly Leu Phe Ser Tyr  
 370 375 380

Val Ser Ala Val Arg Ile Pro Gln Gln Lys Gln Met Asp Tyr Pro Pro  
 385 390 395 400

Pro Ala Ile Gln Cys Asn Val Leu Trp Ile Arg Asp Gly Val Ser Asn  
 405 410 415

Met Lys Tyr Ser Ala Val Val Thr Pro Asp Val Tyr Pro Phe Pro Asn  
 420 425 430

Val Ser Ile Gly Ile Ile Asp Gly His Ile Val Cys Thr Ala Lys Cys  
 435 440 445

Val Pro Arg Gly Val Val His Phe Val Trp Trp Val Asn Asp Ser Pro  
 450 455 460

Ile Asn His Glu Asn Ser Glu Ile Thr Gly Val Cys Asp Gln Asn Lys  
 465 470 475 480

Arg Phe Val Asn Met Gln Ser Ser Cys Pro Thr Ser Glu Leu Asp Gly  
 485 490 495

Pro Ile Thr Tyr Ser Cys His Leu Asp Gly Tyr Pro Lys Lys Phe Pro  
 500 505 510

Pro Phe Ser Ala Val Tyr Thr Tyr Asp Ala Ser Thr Tyr Ala Thr Thr  
 515 520 525



Phe Ser Val Val Ala Val Ile Ile Gly Val Ile Ser Ile Leu Gly Thr  
 530 535 540

Leu Gly Leu Ile Ala Val Ile Ala Thr Leu Cys Ile Arg Cys Cys Ser  
 545 550 555 560

<210> 74  
 <211> 396  
 <212> PRT  
 <213> Varicella zoster

<400> 74

Met Asn Glu Ala Val Ile Asp Pro Ile Leu Glu Thr Ala Val Asn Thr  
 1 5 10 15

Gly Asp Met Phe Cys Ser Gln Thr Ile Pro Asn Arg Cys Leu Lys Asp  
 20 25 30

Thr Ile Leu Ile Glu Val Gln Pro Glu Cys Ala Asp Thr Leu Gln Cys  
 35 40 45

Val Leu Asp Asp Lys Val Ser Arg His Gln Pro Leu Leu Arg Asn  
 50 55 60

His Lys Lys Leu Glu Leu Pro Ser Glu Lys Ser Val Thr Arg Gly Gly  
 65 70 75 80

Phe Tyr Met Gln Gln Leu Glu Leu Leu Val Lys Ser Ala Pro Pro Asn  
 85 90 95

Glu Tyr Ala Leu Leu Leu Ile Gln Cys Lys Asp Thr Ala Leu Ala Asp  
 100 105 110

Glu Asp Asn Phe Phe Val Ala Asn Gly Val Ile Asp Ala Gly Tyr Arg  
 115 120 125

Gly Val Ile Ser Ala Leu Leu Tyr Tyr Arg Pro Gly Val Thr Val Ile  
 130 135 140

Leu Pro Gly His Leu Thr Ile Tyr Leu Phe Pro Val Lys Leu Arg Gln  
 145 150 155 160

Ser Arg Leu Leu Pro Lys Asn Val Leu Lys His Leu Asp Pro Ile Phe  
 165 170 175



Lys Ser Ile Gln Val Gln Pro Leu Ser Asn Ser Pro Ser Asn Tyr Glu  
180 185 190

Lys Pro Val Ile Pro Glu Phe Ala Asp Ile Ser Thr Val Gln Gln Gly  
195 200 205

Gln Pro Leu His Arg Asp Ser Ala Glu Tyr His Ile Asp Val Pro Leu  
210 215 220

Thr Tyr Lys His Ile Ile Asn Pro Lys Arg Gln Glu Asp Ala Gly Tyr  
225 230 235 240

Asp Ile Cys Val Pro Tyr Asn Leu Tyr Leu Lys Arg Asn Glu Phe Ile  
245 250 255

Lys Ile Val Leu Pro Ile Ile Arg Asp Trp Asp Leu Gln His Pro Ser  
260 265 270

Ile Asn Ala Tyr Ile Phe Gly Arg Ser Ser Lys Ser Arg Ser Gly Ile  
275 280 285

Ile Val Cys Pro Thr Ala Trp Pro Ala Gly Glu His Cys Lys Phe Tyr  
290 295 300

Val Tyr Asn Leu Thr Gly Asp Asp Ile Arg Ile Lys Thr Gly Asp Arg  
305 310 315 320

Leu Ala Gln Val Leu Leu Ile Asp His Asn Thr Gln Ile His Leu Lys  
325 330 335

His Asn Val Leu Ser Asn Ile Ala Phe Pro Tyr Ala Ile Arg Gly Lys  
340 345 350

Cys Gly Ile Pro Gly Val Gln Trp Tyr Phe Thr Lys Thr Leu Asp Leu  
355 360 365

Ile Ala Thr Pro Ser Glu Arg Gly Thr Arg Gly Phe Gly Ser Thr Asp  
370 375 380

Lys Glu Thr Asn Asp Val Asp Phe Leu Leu Lys His  
385 390 395

<210> 75

<211> 1083

<212> PRT

<213> Varicella zoster



<400> 75

Met Asp Lys Ser Ser Lys Pro Thr Ile Arg Leu Leu Phe Ala Thr Lys  
1 5 10 15

Gly Cys Ala Ile Ser His Ser Leu Leu Leu Leu Thr Gly Gln Ile Ser  
20 25 30

Thr Glu Pro Leu Tyr Val Val Ser Tyr Thr Trp Thr Pro Asp Leu Asp  
35 40 45

Asp Val Phe Val Lys Asn Gly Arg Glu Glu Ile Thr Gln Val Ile Pro  
50 55 60

Thr Lys Arg Pro Arg Glu Val Thr Glu Asn Asp Glu Glu Asn Gln Ile  
65 70 75 80

Met His Leu Phe Cys Ser Arg Asp Val Asn Val Ile Phe Tyr Leu Ile  
85 90 95

Gly Gly Phe Ser Thr Gly Asp Val Arg Ser Arg Val Trp Pro Ile Phe  
100 105 110

Phe Cys Cys Phe Lys Thr Gln Thr Asp Phe Lys Ala Leu Tyr Lys Ala  
115 120 125

Leu Trp Tyr Gly Ala Pro Leu Asn Pro His Ile Ile Ser Asp Thr Leu  
130 135 140

Cys Ile Ser Glu Thr Phe Asp Ile His Ser Glu Val Ile Gln Thr Leu  
145 150 155 160

Met Val Thr Thr His His Leu Asn Arg Lys Gly Leu Ser Asp Asn Gly  
165 170 175

Leu Cys Ile Thr Glu Ala Thr Leu Cys Lys Leu Val Lys Lys Ser Val  
180 185 190

Gly Arg Gln Glu Leu Thr Ser Leu Tyr Ala His Tyr Glu Arg Gln Val  
195 200 205

Leu Ala Ala Tyr Arg Arg Leu Tyr Trp Gly Tyr Gly Cys Ser Pro Phe  
210 215 220

Trp Tyr Ile Val Arg Phe Gly Pro Ser Glu Lys Thr Leu Val Leu Ala  
411



225		230		235		240
Thr Arg Tyr Tyr	Leu Leu Gln Thr Asp	Thr Ser Tyr Asn Thr	Leu Glu			
	245	250	255			
Thr Pro Leu Tyr	Asp Leu Gln Ala Ile Lys Asp Leu Phe	Leu Thr Tyr				
	260	265	270			
Gln Val Pro Ala	Leu Pro Asn Cys Ser Gly Tyr Asn	Ile Ser Asp Leu				
	275	280	285			
Leu Ser Phe Asp	Lys Leu Ser Met Phe Cys Cys Ser	Ser Thr Tyr Thr				
	290	295	300			
Arg Gly Leu Thr	Ala Lys Asn Ala Leu Ser Tyr	Ile Leu Gln Arg Ile				
305	310	315	320			
His Thr Asp Thr	Thr Glu Ile His Ala Val Ser Glu Tyr	Ile Thr Asn				
	325	330	335			
Asp Arg Lys Gly	Leu Lys Val Pro Asp Arg Glu Phe Val	Asp Tyr Ile				
	340	345	350			
Tyr Leu Ala His	Phe Glu Cys Phe Asn Arg Lys Gln	Ile Ala Asp His				
	355	360	365			
Leu Gln Ala Val	Thr Tyr Ser Asp Phe Val Asn Lys	Pro Val Leu Leu				
	370	375	380			
Lys Ser Ser Asn	Leu Gly Lys Arg Ala Thr Ala Asn Phe Phe	Asn His				
385	390	395	400			
Val Arg Ser Arg	Leu Asn Met Arg Asp Tyr Ile Lys Lys	Asn Val Ile				
	405	410	415			
Cys Asp Val Thr	Glu Leu Gly Pro Glu Ile Gly His Lys Tyr Thr	Ile				
	420	425	430			
Thr Lys Thr Tyr	Thr Leu Ser Leu Thr Tyr Ala Ala Lys	Pro Ser Lys				
	435	440	445			
Phe Ile Gly Val	Cys Asp Leu Ala Thr Thr Leu Thr Arg Arg	Val Glu				
	450	455	460			
Asn Ile Glu Lys	Gln Phe Ser Pro Tyr Gly Trp Ser Ser Thr	Ile Pro				
		412				



465		470		475		480
Ser Asn Pro Pro Gly Phe Asp Glu Leu Ser Asn Phe Glu Asp Ser Gly						
		485		490		495
Val Ser Ala Glu Ala Leu Arg Ala Ala Asn Phe Ala Asn Asp Thr Pro						
		500		505		510
Asn Gln Ser Gly Arg Thr Gly Phe Asp Thr Ser Pro Gly Ile Thr Lys						
		515		520		525
Leu Leu Leu Phe Phe Ser Ala Ala Thr Gly Ile Ala Thr His Asp Val						
		530		535		540
Ser Ile Leu Ser Tyr Lys Thr Pro Leu Glu Ala Leu Ile Gly His Ser						
		545		550		555
Glu Val Thr Gly Pro Met Pro Val Tyr Arg Val Ala Leu Pro His Gly						
		565		570		575
Ala Gln Ala Phe Ala Val Ile Ala Asn Asp Thr Trp Ser Ser Ile Thr						
		580		585		590
Asn Arg Tyr Thr Leu Pro His Glu Ala Arg Leu Ile Ala Glu Asp Leu						
		595		600		605
Lys Gln Ile Asn Pro Cys Asn Phe Val Ala Ala Ser Leu Arg Asp Met						
		610		615		620
Gln Leu Thr Leu Leu Leu Ser Thr Ser Val Lys Asn Val Ser Lys Ile						
		625		630		635
Ser Ser Asn Ile Pro Lys Asp Gln Leu Tyr Ile Asn Arg Asn Glu Leu						
		645		650		655
Phe Asn Thr Asn Leu Ile Ile Thr Asn Leu Ile Leu Asp Val Asp Phe						
		660		665		670
His Ile Arg Lys Pro Ile Pro Leu Gly Ile Leu His Ala Gly Met Arg						
		675		680		685
Ala Phe Arg His Gly Ile Leu Thr Ala Met Gln Leu Leu Phe Pro Lys						
		690		695		700
Ala Val Val Asn Pro Asn Lys Asp Pro Cys Tyr Phe Tyr Lys Thr Ala						
						413



705		710		715		720									
Cys	Pro	Glu	Pro	Thr	Val	Glu	Val	Leu	Asp	Asp	Asp	Asn	Leu	Leu	Asp
				725					730					735	
Ile	Thr	Ser	His	Ser	Asp	Ile	Asp	Phe	Tyr	Ile	Glu	Asn	Gly	Glu	Leu
			740					745					750		
Tyr	Thr	Cys	Val	Glu	Glu	Asn	Tyr	Thr	Glu	Asp	Val	Trp	Phe	Phe	Asp
		755					760					765			
Thr	Gln	Thr	Thr	Ser	Glu	Val	His	Thr	His	Ala	Asp	Val	Ser	Asn	Asn
	770					775					780				
Glu	Asn	Leu	His	Glu	Thr	Leu	Pro	Cys	Asn	Cys	Lys	Glu	Lys	Ile	Gly
785					790					795					800
Phe	Arg	Val	Cys	Val	Pro	Ile	Pro	Asn	Pro	Tyr	Ala	Leu	Val	Gly	Ser
				805					810					815	
Ser	Thr	Leu	Lys	Gly	Phe	Ala	Gln	Ile	Leu	Gln	Gln	Ala	Val	Leu	Leu
			820					825					830		
Glu	Arg	Glu	Phe	Val	Glu	Tyr	Ile	Gly	Pro	Tyr	Leu	Arg	Asp	Phe	Ser
		835					840					845			
Phe	Ile	Asp	Thr	Gly	Val	Tyr	Ser	His	Gly	His	Ser	Leu	Arg	Leu	Pro
	850					855					860				
Phe	Phe	Ser	Lys	Val	Thr	Thr	Thr	Gly	Thr	Ala	Val	Gly	Gln	Leu	Leu
865					870					875					880
Pro	Phe	Tyr	Val	Val	Pro	Glu	Gln	Cys	Ile	Asp	Ile	Leu	Ala	Phe	Val
				885					890					895	
Thr	Ser	His	Arg	Asn	Pro	Ala	Asn	Phe	His	Phe	His	Ser	Arg	Pro	Gln
			900					905					910		
Ser	Asn	Val	Pro	Val	Gln	Phe	Ile	Leu	His	Asn	Leu	Gly	Gly	Glu	Tyr
		915					920					925			
Ala	Glu	Phe	Phe	Glu	Arg	Lys	Val	Ala	Arg	Asn	Lys	Gln	Ile	Phe	Ser
	930					935					940				
Ser	Pro	Gln	Ile	Ser	Leu	Thr	Lys	Ala	Leu	Lys	Glu	Arg	Gly	Val	Thr



945		950		955		960									
Cys	Leu	Asp	Ala	Phe	Thr	Leu	Glu	Ala	Phe	Val	Asp	Ser	Thr	Ile	Leu
			965						970					975	
Glu	Ser	Ile	Val	Glu	His	Ile	Ala	Val	His	Phe	Pro	Gly	Arg	Asp	Arg
			980						985					990	
Glu	Tyr	Thr	Leu	Thr	Ser	Ser	Lys	Cys	Ile	Ala	Ile	Lys	Arg	Asp	Trp
		995					1000					1005			
Val	Leu	Phe	Gln	Leu	Ile	Cys	Gly	Thr	Lys	Gly	Phe	Thr	Cys	Leu	
	1010					1015					1020				
Arg	Tyr	Pro	His	Arg	Gly	Gly	Arg	Thr	Ala	Pro	Arg	Thr	Phe	Val	
	1025					1030					1035				
Ser	Leu	Arg	Val	Asp	His	His	Asn	Arg	Leu	Cys	Ile	Ser	Leu	Ala	
	1040					1045					1050				
Gln	Gln	Cys	Phe	Ala	Thr	Lys	Cys	Asp	Ser	Asn	Arg	Met	His	Thr	
	1055					1060					1065				
Ile	Phe	Thr	Leu	Glu	Val	Pro	Asn	Tyr	Pro	Asn	Leu	Thr	Ser	Ser	
	1070					1075					1080				
<210> 76															
<211> 340															
<212> PRT															
<213> Varicella zoster															
<400> 76															
Met	Gln	Ala	Leu	Gly	Ile	Lys	Thr	Glu	His	Phe	Ile	Ile	Met	Cys	Leu
1				5					10				15		
Leu	Ser	Gly	His	Ala	Val	Phe	Thr	Leu	Trp	Tyr	Thr	Ala	Arg	Val	Lys
			20					25					30		
Phe	Glu	His	Glu	Cys	Val	Tyr	Ala	Thr	Thr	Val	Ile	Asn	Gly	Gly	Pro
		35					40					45			
Val	Val	Trp	Gly	Ser	Tyr	Asn	Asn	Ser	Leu	Ile	Tyr	Val	Thr	Phe	Val
	50					55					60				
Asn	His	Ser	Thr	Phe	Leu	Asp	Gly	Leu	Ser	Gly	Tyr	Asp	Tyr	Ser	Cys
65					70					75				80	
415															



Arg Glu Asn Leu Leu Ser Gly Asp Thr Met Val Lys Thr Ala Ile Ser  
85 90 95

Thr Pro Leu His Asp Lys Ile Arg Ile Val Leu Gly Thr Arg Asn Cys  
100 105 110

His Ala Tyr Phe Trp Cys Val Gln Leu Lys Met Ile Phe Phe Ala Trp  
115 120 125

Phe Val Tyr Gly Met Tyr Leu Gln Phe Arg Arg Ile Arg Arg Met Phe  
130 135 140

Gly Pro Phe Arg Ser Ser Cys Glu Leu Ile Ser Pro Thr Ser Tyr Ser  
145 150 155 160

Leu Asn Tyr Val Thr Arg Val Ile Ser Asn Ile Leu Leu Gly Tyr Pro  
165 170 175

Tyr Thr Lys Leu Ala Arg Leu Leu Cys Asp Val Ser Met Arg Arg Asp  
180 185 190

Gly Met Ser Lys Val Phe Asn Ala Asp Pro Ile Ser Phe Leu Tyr Met  
195 200 205

His Lys Gly Val Thr Leu Leu Met Leu Leu Glu Val Ile Ala His Ile  
210 215 220

Ser Ser Gly Cys Ile Val Leu Leu Thr Leu Gly Val Ala Tyr Thr Pro  
225 230 235 240

Cys Ala Leu Leu Tyr Pro Thr Tyr Ile Arg Ile Leu Ala Trp Val Val  
245 250 255

Val Cys Thr Leu Ala Ile Val Glu Leu Ile Ser Tyr Val Arg Pro Lys  
260 265 270

Pro Thr Lys Asp Asn His Leu Asn His Ile Asn Thr Gly Gly Ile Arg  
275 280 285

Gly Ile Cys Thr Thr Cys Cys Ala Thr Val Met Ser Gly Leu Ala Ile  
290 295 300

Lys Cys Phe Tyr Ile Val Ile Phe Ala Ile Ala Val Val Ile Phe Met  
305 310 315 320



His Tyr Glu Gln Arg Val Gln Val Ser Leu Phe Gly Glu Ser Glu Asn  
325 330 335

Ser Gln Lys His  
340

<210> 77  
<211> 452  
<212> PRT  
<213> Varicella zoster

<400> 77

Met Ala Ser Ala Ser Ile Pro Thr Asp Pro Asp Val Ser Thr Ile Cys  
1 5 10 15

Glu Asp Phe Met Asn Leu Leu Pro Asp Glu Pro Ser Asp Asp Phe Ala  
20 25 30

Leu Glu Val Thr Asp Trp Ala Asn Asp Glu Ala Ile Gly Ser Thr Pro  
35 40 45

Gly Glu Asp Ser Thr Thr Ser Arg Thr Val Tyr Val Glu Arg Thr Ala  
50 55 60

Asp Thr Ala Tyr Asn Pro Arg Tyr Ser Lys Arg Arg His Gly Arg Arg  
65 70 75 80

Glu Ser Tyr His His Asn Arg Pro Lys Thr Leu Val Val Val Leu Pro  
85 90 95

Asp Ser Asn His His Gly Gly Arg Asp Val Glu Thr Gly Tyr Ala Arg  
100 105 110

Ile Glu Arg Gly His Arg Arg Ser Ser Arg Ser Tyr Asn Thr Gln Ser  
115 120 125

Ser Arg Lys His Arg Asp Arg Ser Leu Ser Asn Arg Arg Arg Arg Pro  
130 135 140

Thr Thr Pro Pro Ala Met Thr Thr Gly Glu Arg Asn Asp Gln Thr His  
145 150 155 160

Asp Glu Ser Tyr Arg Leu Arg Phe Ser Lys Arg Asp Ala Arg Arg Glu  
165 170 175



Arg Ile Arg Lys Glu Tyr Asp Ile Pro Val Asp Arg Ile Thr Gly Arg  
 180 185 190

Ala Ile Glu Val Val Ser Thr Ala Gly Ala Ser Val Thr Ile Asp Ser  
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Val Arg His Leu Asp Glu Thr Ile Glu Lys Leu Val Val Arg Tyr Ala  
 210 215 220

Thr Ile Gln Glu Gly Asp Ser Trp Ala Ser Gly Gly Cys Phe Pro Gly  
 225 230 235 240

Ile Lys Gln Asn Thr Ser Trp Pro Glu Leu Met Leu Tyr Gly His Glu  
 245 250 255

Leu Tyr Arg Thr Phe Glu Ser Tyr Lys Met Asp Ser Arg Ile Ala Arg  
 260 265 270

Ala Leu Arg Glu Arg Val Ile Arg Gly Glu Ser Leu Ile Glu Ala Leu  
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Glu Ser Ala Asp Glu Leu Leu Thr Trp Ile Lys Met Leu Ala Ala Lys  
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Asn Leu Pro Ile Tyr Thr Asn Asn Pro Ile Val Ala Thr Ser Lys Ser  
 305 310 315 320

Leu Leu Glu Asn Leu Lys Leu Lys Leu Gly Pro Phe Val Arg Cys Leu  
 325 330 335

Leu Leu Asn Arg Asp Asn Asp Leu Gly Ser Arg Thr Leu Pro Glu Leu  
 340 345 350

Leu Arg Gln Gln Arg Phe Ser Asp Ile Thr Cys Ile Thr Thr Tyr Met  
 355 360 365

Phe Val Met Ile Ala Arg Ile Ala Asn Ile Val Val Arg Gly Ser Lys  
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Phe Val Glu Tyr Asp Asp Ile Ser Cys Asn Val Gln Val Leu Gln Glu  
 385 390 395 400

Tyr Thr Pro Gly Ser Cys Leu Ala Gly Val Leu Glu Ala Leu Ile Thr  
 405 410 415



His Gln Arg Glu Cys Gly Arg Val Glu Cys Thr Leu Ser Thr Trp Ala  
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Thr Phe Asn Cys  
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Ala Leu Glu Thr Thr Trp Thr Cys Pro Ala Asn Ser His Ala Pro Thr  
 35 40 45

Pro Ser Pro Leu Tyr Gly Val Lys Arg Leu Cys Ala Leu Arg Ala Thr  
 50 55 60

Cys Gly Arg Ala Asp Asp Leu His Ala Phe Leu Ile Gly Leu Gly Arg  
 65 70 75 80

Arg Asp Lys Pro Ser Glu Ser Pro Met Tyr Val Asp Leu Gln Pro Phe  
 85 90 95

Cys Ser Leu Leu Asn Ser Gln Arg Leu Leu Pro Glu Met Ala Asn Tyr  
 100 105 110

Asn Thr Leu Cys Asp Ala Pro Phe Ser Ala Ala Thr Gln Gln Met Met  
 115 120 125

Leu Glu Ser Gly Gln Leu Gly Val His Leu Ala Ala Ile Gly Tyr His  
 130 135 140

Cys His Cys Lys Ser Pro Phe Ser Ala Glu Cys Trp Thr Gly Ala Ser  
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Glu Ala Tyr Asp His Val Val Cys Gly Gly Lys Ala Arg Ala Ala Val  
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Gly Gly Leu

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Gln Asn Asn Ala Ser Pro Leu Val Val Gln Thr Arg Pro Pro Ala Val  
35 40 45

Leu Ile Pro Leu Val Asp Val Pro Arg Pro Arg Ser Arg Arg Lys Ala  
50 55 60

Ser Ala Gln Leu Lys Met Gln Met Asp Arg Leu Cys Asn Val Leu Gly  
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Val Val His Thr Arg Ala Thr Ser Cys Lys Arg Glu  
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Tyr Phe Glu Arg Leu Lys Arg Arg Arg Asp Glu Arg Phe Gly Thr Leu	20	25	30	
gag tcc cct acc ccg tgt tcc acg cgg caa ggg tct ctg gga aac gca				144
Glu Ser Pro Thr Pro Cys Ser Thr Arg Gln Gly Ser Leu Gly Asn Ala	35	40	45	
acc caa atc ccg ttt ctg aat ttt gct ata gat gta acc cga cgt cat				192
Thr Gln Ile Pro Phe Leu Asn Phe Ala Ile Asp Val Thr Arg Arg His	50	55	60	
cag gcc gtt att ccc gga att gga acg ctt cac aac tgt tgt gaa tat				240
Gln Ala Val Ile Pro Gly Ile Gly Thr Leu His Asn Cys Cys Glu Tyr	65	70	75	80
att cca ctg ttc tcg gct act gct cga cgg gca atg ttt ggc gcg ttt				288
Ile Pro Leu Phe Ser Ala Thr Ala Arg Arg Ala Met Phe Gly Ala Phe	85	90	95	
cta tcg tca aca ggg tac aac tgt acc ccc aat gta gtt ttg aaa cca				336
Leu Ser Ser Thr Gly Tyr Asn Cys Thr Pro Asn Val Val Leu Lys Pro	100	105	110	
tgg cga tat tcg gta aat gca aac gta agc cct gaa tta aaa aag gct				384
Trp Arg Tyr Ser Val Asn Ala Asn Val Ser Pro Glu Leu Lys Lys Ala	115	120	125	
gtc agt agt gta cag ttt tat gaa tat tca ccg gaa gaa gca gca cct				432
Val Ser Ser Val Gln Phe Tyr Glu Tyr Ser Pro Glu Glu Ala Ala Pro	130	135	140	
cat cga aat gcg tat agc ggt gtt atg aac aca ttt cgc gcg ttt tct				480
His Arg Asn Ala Tyr Ser Gly Val Met Asn Thr Phe Arg Ala Phe Ser	145	150	155	160
ctg tcg gat agt ttc tgt cag ttg tct acc ttt aca caa cgg ttt tcg				528
Leu Ser Asp Ser Phe Cys Gln Leu Ser Thr Phe Thr Gln Arg Phe Ser	165	170	175	
tac ctt gtg gaa aca tct ttt gag agt att gaa gag tgt gga agt cat				576
Tyr Leu Val Glu Thr Ser Phe Glu Ser Ile Glu Glu Cys Gly Ser His	180	185	190	
ggc aaa cgc gca aag gtt gac gtt cca atc tat ggc aga tat aag ggg				624
Gly Lys Arg Ala Lys Val Asp Val Pro Ile Tyr Gly Arg Tyr Lys Gly	195	200	205	
acg ttg gaa ctg ttt caa aaa atg atc ctc atg cac acc acg cat ttt				672
Thr Leu Glu Leu Phe Gln Lys Met Ile Leu Met His Thr Thr His Phe	210	215	220	
att tca tcg gtg cta ttg ggc gat cat gcc gac aga gtt gac tgc ttt				720
Ile Ser Ser Val Leu Leu Gly Asp His Ala Asp Arg Val Asp Cys Phe	225	230	235	240
ctg cgt aca gtg ttt aac acg cca agt gtt tct gac agt gtt tta gaa				768
Leu Arg Thr Val Phe Asn Thr Pro Ser Val Ser Asp Ser Val Leu Glu				



245	250	255	
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Gly Ile Arg Gly Gln Asp Phe Asn Leu Leu Phe	
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gtg gat gaa gct aat ttt att cga cct gat gct gta caa act ata gtc	4636
Val Asp Glu Ala Asn Phe Ile Arg Pro Asp Ala Val Gln Thr Ile Val	
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Gly Phe Leu Asn Gln Thr Asn Cys Lys Ile Ile Phe Val Ser Ser Thr	
380 385 390 395	
aat acc gga aaa gca agt aca agt ttt ttg tat aac tta cgt gga tcg	4732
Asn Thr Gly Lys Ala Ser Thr Ser Phe Leu Tyr Asn Leu Arg Gly Ser	
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Ser Asp Gln Leu Leu Asn Val Val Thr Tyr Val Cys Asp Asp His Met	
415 420 425	
ccg cgt gtt tta gca cat agc gat gtc aca gct tgt tcg tgt tat gta	4828
Pro Arg Val Leu Ala His Ser Asp Val Thr Ala Cys Ser Cys Tyr Val	
430 435 440	
tta aat aag ccg gtt ttc atc aca atg gat gga gcc atg cgg cgc act	4876
Leu Asn Lys Pro Val Phe Ile Thr Met Asp Gly Ala Met Arg Arg Thr	
445 450 455	
gca gat tta ttt atg gcc gac tcc ttc gtg cag gaa att gta ggt ggg	4924
Ala Asp Leu Phe Met Ala Asp Ser Phe Val Gln Glu Ile Val Gly Gly	
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Arg Lys Gln Asn Ser Gly Gly Val Gly Phe Asp Arg Pro Leu Phe Thr	
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aaa act gcc cgt gag agg ttt att tta tat cgg ccg tca acc gtt gcg	5020
Lys Thr Ala Arg Glu Arg Phe Ile Leu Tyr Arg Pro Ser Thr Val Ala	



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Asn	Cys	Ala	Ile	Leu	Ser	Ser	Val	Leu	Tyr	Val	Tyr	Val	Asp	Pro	Ala	
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Gln	Cys	Leu	Gly	His	Ile	Leu	Ala	Leu	His	Pro	Asn	Thr	Phe	Thr	Asn	
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Val	His	Val	Ser	Ile	Glu	Gly	Asn	Ser	Ser	Gln	Asp	Ser	Ala	Val	Ala	
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Val	Leu	Ser	Ser	Ala	Pro	Val	Leu	Leu	Phe	Tyr	His	Ser	Ile	Pro	Pro	
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gga	tgt	agc	gtg	gcg	tac	cct	ttt	ttt	tta	tta	caa	aaa	caa	aaa	acg	5452
Gly	Cys	Ser	Val	Ala	Tyr	Pro	Phe	Phe	Leu	Leu	Gln	Lys	Gln	Lys	Thr	
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Thr	Gly	Thr	Met	Ser	Asp	Asp	Leu	Met	Val	Ala	Leu	Ile	Met	Ser	Val	
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735

740

745

taa

5743

&lt;210&gt; 81

&lt;211&gt; 747

&lt;212&gt; PRT

&lt;213&gt; Varicella zoster

&lt;400&gt; 81

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Tyr Phe Glu Arg Leu Lys Arg Arg Arg Asp Glu Arg Phe Gly Thr Leu  
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Glu Ser Pro Thr Pro Cys Ser Thr Arg Gln Gly Ser Leu Gly Asn Ala  
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Thr Gln Ile Pro Phe Leu Asn Phe Ala Ile Asp Val Thr Arg Arg His  
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Gln Ala Val Ile Pro Gly Ile Gly Thr Leu His Asn Cys Cys Glu Tyr  
 65 70 75 80

Ile Pro Leu Phe Ser Ala Thr Ala Arg Arg Ala Met Phe Gly Ala Phe  
 85 90 95

Leu Ser Ser Thr Gly Tyr Asn Cys Thr Pro Asn Val Val Leu Lys Pro  
 100 105 110

Trp Arg Tyr Ser Val Asn Ala Asn Val Ser Pro Glu Leu Lys Lys Ala  
 115 120 125

Val Ser Ser Val Gln Phe Tyr Glu Tyr Ser Pro Glu Glu Ala Ala Pro  
 130 135 140

His Arg Asn Ala Tyr Ser Gly Val Met Asn Thr Phe Arg Ala Phe Ser  
 145 150 155 160

Leu Ser Asp Ser Phe Cys Gln Leu Ser Thr Phe Thr Gln Arg Phe Ser  
 165 170 175

Tyr Leu Val Glu Thr Ser Phe Glu Ser Ile Glu Glu Cys Gly Ser His  
 180 185 190



Gly Lys Arg Ala Lys Val Asp Val Pro Ile Tyr Gly Arg Tyr Lys Gly  
 195 200 205

Thr Leu Glu Leu Phe Gln Lys Met Ile Leu Met His Thr Thr His Phe  
 210 215 220

Ile Ser Ser Val Leu Leu Gly Asp His Ala Asp Arg Val Asp Cys Phe  
 225 230 235 240

Leu Arg Thr Val Phe Asn Thr Pro Ser Val Ser Asp Ser Val Leu Glu  
 245 250 255

His Phe Lys Gln Lys Ser Thr Val Phe Leu Val Pro Arg Arg His Gly  
 260 265 270

Lys Thr Trp Phe Leu Val Pro Leu Ile Ala Leu Val Met Ala Thr Phe  
 275 280 285

Arg Gly Ile Lys Val Gly Tyr Thr Ala His Ile Arg Lys Ala Thr Glu  
 290 295 300

Pro Val Phe Glu Gly Ile Lys Ser Arg Leu Glu Gln Trp Phe Gly Ala  
 305 310 315 320

Asn Tyr Val Asp His Val Lys Gly Glu Ser Ile Thr Phe Ser Phe Thr  
 325 330 335

Asp Gly Ser Tyr Ser Thr Ala Val Phe Ala Ser Ser His Asn Thr Asn  
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Gly Ile Arg Gly Gln Asp Phe Asn Leu Leu Phe Val Asp Glu Ala Asn  
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Phe Ile Arg Pro Asp Ala Val Gln Thr Ile Val Gly Phe Leu Asn Gln  
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Thr Asn Cys Lys Ile Ile Phe Val Ser Ser Thr Asn Thr Gly Lys Ala  
 385 390 395 400

Ser Thr Ser Phe Leu Tyr Asn Leu Arg Gly Ser Ser Asp Gln Leu Leu  
 405 410 415

Asn Val Val Thr Tyr Val Cys Asp Asp His Met Pro Arg Val Leu Ala  
 420 425 430



His Ser Asp Val Thr Ala Cys Ser Cys Tyr Val Leu Asn Lys Pro Val  
 435 440 445

Phe Ile Thr Met Asp Gly Ala Met Arg Arg Thr Ala Asp Leu Phe Met  
 450 455 460

Ala Asp Ser Phe Val Gln Glu Ile Val Gly Gly Arg Lys Gln Asn Ser  
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Gly Gly Val Gly Phe Asp Arg Pro Leu Phe Thr Lys Thr Ala Arg Glu  
 485 490 495

Arg Phe Ile Leu Tyr Arg Pro Ser Thr Val Ala Asn Cys Ala Ile Leu  
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Ser Ser Val Leu Tyr Val Tyr Val Asp Pro Ala Phe Thr Ser Asn Thr  
 515 520 525

Arg Ala Ser Gly Thr Gly Val Ala Ile Val Gly Arg Tyr Lys Ser Asp  
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Trp Ile Ile Phe Gly Leu Glu His Phe Phe Leu Arg Ala Leu Thr Gly  
 545 550 555 560

Thr Ser Ser Ser Glu Ile Gly Arg Cys Val Thr Gln Cys Leu Gly His  
 565 570 575

Ile Leu Ala Leu His Pro Asn Thr Phe Thr Asn Val His Val Ser Ile  
 580 585 590

Glu Gly Asn Ser Ser Gln Asp Ser Ala Val Ala Ile Ser Leu Ala Ile  
 595 600 605

Ala Gln Gln Phe Ala Val Leu Glu Lys Gly Asn Val Leu Ser Ser Ala  
 610 615 620

Pro Val Leu Leu Phe Tyr His Ser Ile Pro Pro Gly Cys Ser Val Ala  
 625 630 635 640

Tyr Pro Phe Phe Leu Leu Gln Lys Gln Lys Thr Pro Ala Val Asp Tyr  
 645 650 655

Phe Val Lys Arg Phe Asn Ser Gly Asn Ile Ile Ala Ser Gln Glu Leu  
 660 665 670



Val Ser Leu Thr Val Lys Leu Gly Val Asp Pro Val Glu Tyr Leu Cys  
675 680 685

Lys Gln Leu Asp Asn Leu Thr Glu Val Ile Lys Gly Gly Met Gly Asn  
690 695 700

Leu Asp Thr Lys Thr Tyr Thr Gly Lys Gly Thr Thr Gly Thr Met Ser  
705 710 715 720

Asp Asp Leu Met Val Ala Leu Ile Met Ser Val Tyr Ile Gly Ser Ser  
725 730 735

Cys Ile Pro Asp Ser Val Phe Met Pro Ile Lys  
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<211> 1308  
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gac acc acg aca ccc gag gtg gaa gcg tta gat cat caa atg gat acg 96  
Asp Thr Thr Thr Pro Glu Val Glu Ala Leu Asp His Gln Met Asp Thr  
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ctt aat tgg cga att tgg ata att cag gtg atg atg ttc act ttg ggt 144  
Leu Asn Trp Arg Ile Trp Ile Ile Gln Val Met Met Phe Thr Leu Gly  
35 40 45  
gcg gta atg ctc ctg gct acg tta att gcc gcc tct tct gaa tat acc 192  
Ala Val Met Leu Leu Ala Thr Leu Ile Ala Ala Ser Ser Glu Tyr Thr  
50 55 60  
ggg atc cct tgt ttt tat gct gcc gta gtt gat tat gag tta ttt aac 240  
Gly Ile Pro Cys Phe Tyr Ala Ala Val Val Asp Tyr Glu Leu Phe Asn  
65 70 75 80  
gcc acc cta gat ggg ggg gta tgg tcc gga aat aga ggt gga tac agc 288  
Ala Thr Leu Asp Gly Gly Val Trp Ser Gly Asn Arg Gly Gly Tyr Ser  
85 90 95  
gcc ccg gtt ttg ttt ttg gaa cca cat agc gtt gtg gca ttt act tac 336  
Ala Pro Val Leu Phe Leu Glu Pro His Ser Val Val Ala Phe Thr Tyr  
100 105 110  
tac acg gct tta acg gca atg gcc atg gcg gta tat aca ctg atc acg 384



Tyr Thr Ala Leu Thr Ala Met Ala Met Ala Val Tyr Thr Leu Ile Thr	
115 120 125	
gcc gcg att ata cac cga gaa acg aaa aat caa cgt gtc cgg caa agc	432
Ala Ala Ile Ile His Arg Glu Thr Lys Asn Gln Arg Val Arg Gln Ser	
130 135 140	
tcc ggt gtt gca tgg tta gtt gta gat ccc aca aca ctt ttt tgg ggt	480
Ser Gly Val Ala Trp Leu Val Val Asp Pro Thr Thr Leu Phe Trp Gly	
145 150 155 160	
ctt ttg tca ttg tgg tta tta aac gcc gtt gtg tta tta tta gct tac	528
Leu Leu Ser Leu Trp Leu Leu Asn Ala Val Val Leu Leu Leu Ala Tyr	
165 170 175	
aag caa atc ggc gtg gct gct aca tta tat ctt gga cat ttt gcg aca	576
Lys Gln Ile Gly Val Ala Ala Thr Leu Tyr Leu Gly His Phe Ala Thr	
180 185 190	
agt gta ata ttt aca acg tat ttt tgt gga cgc gga aaa ttg gac gaa	624
Ser Val Ile Phe Thr Thr Tyr Phe Cys Gly Arg Gly Lys Leu Asp Glu	
195 200 205	
acg aac ata aaa gcg gtc gca aat tta cga cag cag agc gtc ttt tta	672
Thr Asn Ile Lys Ala Val Ala Asn Leu Arg Gln Gln Ser Val Phe Leu	
210 215 220	
tat cgc ctt gcg ggg cct acg cgc gca gtg ttc gtg aat ttg atg gct	720
Tyr Arg Leu Ala Gly Pro Thr Arg Ala Val Phe Val Asn Leu Met Ala	
225 230 235 240	
gcg ttg atg gcg ata tgt atc cta ttt gta tca tta atg ctg gaa ctt	768
Ala Leu Met Ala Ile Cys Ile Leu Phe Val Ser Leu Met Leu Glu Leu	
245 250 255	
gtg gtg gcg aat cat cta cat acg gga ctg tgg tca tcg gtg tcc gtg	816
Val Val Ala Asn His Leu His Thr Gly Leu Trp Ser Ser Val Ser Val	
260 265 270	
gcc atg tct aca ttt agt aca ttg tca gtt gta tat ctt ata gta tca	864
Ala Met Ser Thr Phe Ser Thr Leu Ser Val Val Tyr Leu Ile Val Ser	
275 280 285	
gaa tta att ttg gcg cat tat ata cac gtg tta ata gga ccg tcc ctg	912
Glu Leu Ile Leu Ala His Tyr Ile His Val Leu Ile Gly Pro Ser Leu	
290 295 300	
gga acg ctc gtg gcc tgt gct acg ttg gga acc gcc gcg cac tcg tat	960
Gly Thr Leu Val Ala Cys Ala Thr Leu Gly Thr Ala Ala His Ser Tyr	
305 310 315 320	
atg gac cga tta tat gac cct ata tcg gtt caa tct cca cgg tta att	1008
Met Asp Arg Leu Tyr Asp Pro Ile Ser Val Gln Ser Pro Arg Leu Ile	
325 330 335	
ccc aca act cgg gga acc ttg gct tgc ctg gcc gtg ttt tcc gtt gtc	1056
Pro Thr Thr Arg Gly Thr Leu Ala Cys Leu Ala Val Phe Ser Val Val	
340 345 350	
atg ttg ctt ctc aga ttg atg cgt gca tat gtg tat cat cga cag aaa	1104



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Met Gly Thr Gln Lys Lys Gly Pro Arg Ser Glu Lys Val Ser Pro Tyr  
1 5 10 15

Ala Val Met Leu Leu Ala Thr Leu Ile Ala Ala Ser Ser Glu Tyr Thr  
50 55 60

Ala Thr Leu Asp Gly Gly Val Trp Ser Gly Asn Arg Gly Gly Tyr Ser  
85 90 95

Tyr Thr Ala Leu Thr Ala Met Ala Met Ala Val Tyr Thr Leu Ile Thr  
431



115					120					125					
Ala	Ala	Ile	Ile	His	Arg	Glu	Thr	Lys	Asn	Gln	Arg	Val	Arg	Gln	Ser
130						135					140				
Ser	Gly	Val	Ala	Trp	Leu	Val	Val	Asp	Pro	Thr	Thr	Leu	Phe	Trp	Gly
145					150					155					160
Leu	Leu	Ser	Leu	Trp	Leu	Leu	Asn	Ala	Val	Val	Leu	Leu	Leu	Ala	Tyr
				165					170					175	
Lys	Gln	Ile	Gly	Val	Ala	Ala	Thr	Leu	Tyr	Leu	Gly	His	Phe	Ala	Thr
			180					185					190		
Ser	Val	Ile	Phe	Thr	Thr	Tyr	Phe	Cys	Gly	Arg	Gly	Lys	Leu	Asp	Glu
		195					200					205			
Thr	Asn	Ile	Lys	Ala	Val	Ala	Asn	Leu	Arg	Gln	Gln	Ser	Val	Phe	Leu
	210					215					220				
Tyr	Arg	Leu	Ala	Gly	Pro	Thr	Arg	Ala	Val	Phe	Val	Asn	Leu	Met	Ala
225					230					235					240
Ala	Leu	Met	Ala	Ile	Cys	Ile	Leu	Phe	Val	Ser	Leu	Met	Leu	Glu	Leu
				245					250					255	
Val	Val	Ala	Asn	His	Leu	His	Thr	Gly	Leu	Trp	Ser	Ser	Val	Ser	Val
			260					265					270		
Ala	Met	Ser	Thr	Phe	Ser	Thr	Leu	Ser	Val	Val	Tyr	Leu	Ile	Val	Ser
		275					280					285			
Glu	Leu	Ile	Leu	Ala	His	Tyr	Ile	His	Val	Leu	Ile	Gly	Pro	Ser	Leu
	290					295					300				
Gly	Thr	Leu	Val	Ala	Cys	Ala	Thr	Leu	Gly	Thr	Ala	Ala	His	Ser	Tyr
305					310					315					320
Met	Asp	Arg	Leu	Tyr	Asp	Pro	Ile	Ser	Val	Gln	Ser	Pro	Arg	Leu	Ile
				325					330					335	
Pro	Thr	Thr	Arg	Gly	Thr	Leu	Ala	Cys	Leu	Ala	Val	Phe	Ser	Val	Val
			340					345					350		
Met	Leu	Leu	Leu	Arg	Leu	Met	Arg	Ala	Tyr	Val	Tyr	His	Arg	Gln	Lys



355

360

365

Arg Ser Arg Phe Tyr Gly Ala Val Arg Arg Val Pro Glu Arg Val Arg  
 370 375 380

Gly Tyr Ile Arg Lys Val Lys Pro Ala His Arg Asn Ser Arg Arg Thr  
 385 390 395 400

Asn Tyr Pro Ser Gln Gly Tyr Gly Tyr Val Tyr Glu Asn Asp Ser Thr  
 405 410 415

Tyr Glu Thr Asp Arg Glu Asp Glu Leu Leu Tyr Glu Arg Ser Asn Ser  
 420 425 430

Gly Trp Glu  
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 <213> Varicella zoster

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 aaa agg ata gca agt tct gtt tct att gac cag ggc ttg aat gga agt 96  
 Lys Arg Ile Ala Ser Ser Val Ser Ile Asp Gln Gly Leu Asn Gly Ser  
 20 25 30  
 aac cca aat gac caa tac aag aac atg ttc gat ata tac tgg aat gag 144  
 Asn Pro Asn Asp Gln Tyr Lys Asn Met Phe Asp Ile Tyr Trp Asn Glu  
 35 40 45  
 tac gcc ccg gat ata ggg ttt tgt aca ttt ccg gag gaa gat ggc tgg 192  
 Tyr Ala Pro Asp Ile Gly Phe Cys Thr Phe Pro Glu Glu Asp Gly Trp  
 50 55 60  
 atg tta ata cac cca acc acg caa agt atg ttg ttt cga aaa atc cta 240  
 Met Leu Ile His Pro Thr Thr Gln Ser Met Leu Phe Arg Lys Ile Leu  
 65 70 75 80  
 gcc ggt gac ttt gga tat acc gat gga caa ggc ata tat agc gct gta 288  
 Ala Gly Asp Phe Gly Tyr Thr Asp Gly Gln Gly Ile Tyr Ser Ala Val  
 85 90 95  
 cgg tct acg gaa act gta att cgc caa gtt cag gca acc gtt ttg atg 336  
 Arg Ser Thr Glu Thr Val Ile Arg Gln Val Gln Ala Thr Val Leu Met



100					105					110						
aac	gcg	ttg	gat	gca	act	cgg	tat	gag	gac	cta	gca	gca	gat	tgg	gaa	384
Asn	Ala	Leu	Asp	Ala	Thr	Arg	Tyr	Glu	Asp	Leu	Ala	Ala	Asp	Trp	Glu	
		115					120					125				
cac	cac	atc	caa	caa	tgt	aac	ctg	cat	gcc	ggg	gct	cta	gcg	gaa	cgt	432
His	His	Ile	Gln	Gln	Cys	Asn	Leu	His	Ala	Gly	Ala	Leu	Ala	Glu	Arg	
		130				135					140					
tat	ggg	cta	tgt	gga	gaa	tca	gaa	gcc	gta	cgg	ctt	gca	cat	cag	gtt	480
Tyr	Gly	Leu	Cys	Gly	Glu	Ser	Glu	Ala	Val	Arg	Leu	Ala	His	Gln	Val	
145					150					155					160	
ttt	gaa	acc	tgg	cgt	caa	aca	tta	cag	tca	tcg	tta	ctt	gag	ttt	ctg	528
Phe	Glu	Thr	Trp	Arg	Gln	Thr	Leu	Gln	Ser	Ser	Leu	Leu	Glu	Phe	Leu	
				165					170					175		
cgt	gga	ata	acc	ggg	tgt	ctc	tat	acc	agt	ggg	tta	aat	gga	agg	gtc	576
Arg	Gly	Ile	Thr	Gly	Cys	Leu	Tyr	Thr	Ser	Gly	Leu	Asn	Gly	Arg	Val	
			180					185					190			
ggg	ttt	gcc	aaa	tac	gtg	gac	tgg	ata	gcc	tgt	gta	ggg	att	gtg	ccc	624
Gly	Phe	Ala	Lys	Tyr	Val	Asp	Trp	Ile	Ala	Cys	Val	Gly	Ile	Val	Pro	
		195					200					205				
gtt	gta	aga	aag	gta	cga	tca	gaa	cag	aat	gga	acc	cct	gca	cca	tta	672
Val	Val	Arg	Lys	Val	Arg	Ser	Glu	Gln	Asn	Gly	Thr	Pro	Ala	Pro	Leu	
		210				215					220					
aat	acg	tat	atg	ggg	caa	gcg	gca	gaa	ctg	tcc	cag	atg	tta	aaa	gtt	720
Asn	Thr	Tyr	Met	Gly	Gln	Ala	Ala	Glu	Leu	Ser	Gln	Met	Leu	Lys	Val	
225					230					235					240	
gcc	gat	gca	acg	ttg	gcc	aga	gga	gcg	gcg	gtt	gtc	aca	agc	cta	gtt	768
Ala	Asp	Ala	Thr	Leu	Ala	Arg	Gly	Ala	Ala	Val	Val	Thr	Ser	Leu	Val	
				245					250					255		
gag	tgt	atg	caa	aat	gtt	gct	att	atg	gat	tat	gat	agg	acg	cgt	ctt	816
Glu	Cys	Met	Gln	Asn	Val	Ala	Ile	Met	Asp	Tyr	Asp	Arg	Thr	Arg	Leu	
			260					265					270			
tat	tat	aat	tat	aac	cga	aga	tta	att	atg	gca	aag	gat	gat	gta	acg	864
Tyr	Tyr	Asn	Tyr	Asn	Arg	Arg	Leu	Ile	Met	Ala	Lys	Asp	Asp	Val	Thr	
		275					280					285				
ggc	atg	aag	gga	gag	tgt	ttg	gtc	gtg	tgg	ccg	ccc	gtt	gta	tgt	ggg	912
Gly	Met	Lys	Gly	Glu	Cys	Leu	Val	Val	Trp	Pro	Pro	Val	Val	Cys	Gly	
	290					295					300					
gag	ggg	gta	gta	ttt	gac	tca	ccc	tta	cag	cgg	ctt	tct	ggg	gag	gtg	960
Glu	Gly	Val	Val	Phe	Asp	Ser	Pro	Leu	Gln	Arg	Leu	Ser	Gly	Glu	Val	
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ttg	gcc	tgt	tat	gca	tta	cgt	gaa	cat	gct	cgc	gtc	tgc	caa	gtt	tta	1008
Leu	Ala	Cys	Tyr	Ala	Leu	Arg	Glu	His	Ala	Arg	Val	Cys	Gln	Val	Leu	
				325					330					335		
aat	aca	gcc	cct	ttg	cgc	gtg	tta	ata	ggg	cgc	cgg	aat	gaa	gat	gat	1056
Asn	Thr	Ala	Pro	Leu	Arg	Val	Leu	Ile	Gly	Arg	Arg	Asn	Glu	Asp	Asp	



340					345					350						
aga	tct	cac	agc	aca	cgt	gcg	gtt	gat	cgt	ata	atg	ggc	gag	aac	gat	1104
Arg	Ser	His	Ser	Thr	Arg	Ala	Val	Asp	Arg	Ile	Met	Gly	Glu	Asn	Asp	
		355					360					365				
aca	aca	cgg	gct	gga	tcg	gcc	gcg	tct	aga	ctt	gta	aag	cta	ata	gtt	1152
Thr	Thr	Arg	Ala	Gly	Ser	Ala	Ala	Ser	Arg	Leu	Val	Lys	Leu	Ile	Val	
	370					375					380					
aac	tta	aaa	aac	atg	aga	cat	gtt	gga	gat	att	acc	gaa	acc	gta	cgt	1200
Asn	Leu	Lys	Asn	Met	Arg	His	Val	Gly	Asp	Ile	Thr	Glu	Thr	Val	Arg	
385					390				395						400	
tcc	tat	cta	gaa	gaa	acg	ggc	aat	cac	att	ctg	gaa	gga	agt	gga	tcg	1248
Ser	Tyr	Leu	Glu	Glu	Thr	Gly	Asn	His	Ile	Leu	Glu	Gly	Ser	Gly	Ser	
			405						410					415		
gtg	gac	aca	tca	caa	ccg	ggg	ttt	ggc	aag	gcc	aac	caa	tcc	ttt	aac	1296
Val	Asp	Thr	Ser	Gln	Pro	Gly	Phe	Gly	Lys	Ala	Asn	Gln	Ser	Phe	Asn	
			420					425					430			
ggg	ggg	gca	atg	tcc	gga	aca	aca	aac	gtt	caa	agt	gcg	ttt	aaa	act	1344
Gly	Gly	Ala	Met	Ser	Gly	Thr	Thr	Asn	Val	Gln	Ser	Ala	Phe	Lys	Thr	
		435					440					445				
tcg	gtg	gtt	aac	agt	atc	aac	ggc	atg	ctc	gag	ggt	tat	gtg	aat	aat	1392
Ser	Val	Val	Asn	Ser	Ile	Asn	Gly	Met	Leu	Glu	Gly	Tyr	Val	Asn	Asn	
	450					455					460					
tta	ttc	aaa	acc	att	gag	ggg	ctc	aag	gat	gtg	aac	agc	gat	ctg	acc	1440
Leu	Phe	Lys	Thr	Ile	Glu	Gly	Leu	Lys	Asp	Val	Asn	Ser	Asp	Leu	Thr	
465					470					475					480	
gaa	agg	ctc	cag	ttc	aaa	gaa	gga	gag	ctg	aaa	cgg	tta	cgg	gaa	gag	1488
Glu	Arg	Leu	Gln	Phe	Lys	Glu	Gly	Glu	Leu	Lys	Arg	Leu	Arg	Glu	Glu	
			485						490					495		
agg	gta	aaa	ata	aag	cca	tct	aaa	ggg	tca	cat	att	aca	atg	gca	gaa	1536
Arg	Val	Lys	Ile	Lys	Pro	Ser	Lys	Gly	Ser	His	Ile	Thr	Met	Ala	Glu	
			500					505					510			
gaa	aca	cgt	att	gcc	gat	tta	aat	cac	gag	gtt	ata	gat	ctt	acc	ggc	1584
Glu	Thr	Arg	Ile	Ala	Asp	Leu	Asn	His	Glu	Val	Ile	Asp	Leu	Thr	Gly	
		515					520					525				
ata	ata	ggg	gat	gat	gca	tat	att	gcc	aat	agt	ttt	caa	tct	cgt	tat	1632
Ile	Ile	Gly	Asp	Asp	Ala	Tyr	Ile	Ala	Asn	Ser	Phe	Gln	Ser	Arg	Tyr	
		530				535					540					
atc	ccc	cct	tat	gga	gat	gat	ata	aaa	cgt	ttg	tct	gag	cta	tgg	aaa	1680
Ile	Pro	Pro	Tyr	Gly	Asp	Asp	Ile	Lys	Arg	Leu	Ser	Glu	Leu	Trp	Lys	
545					550					555					560	
cag	gaa	ctt	gtt	cgc	tgt	ttt	aag	ctt	cac	cgg	gta	aac	aat	aat	caa	1728
Gln	Glu	Leu	Val	Arg	Cys	Phe	Lys	Leu	His	Arg	Val	Asn	Asn	Asn	Gln	
				565					570					575		
ggc	cag	gaa	att	tct	gta	tca	tat	tca	aat	gcg	tca	atc	tca	tta	cta	1776
Gly	Gln	Glu	Ile	Ser	Val	Ser	Tyr	Ser	Asn	Ala	Ser	Ile	Ser	Leu	Leu	



580	585	590	
gtt gcg ccg tat ttt tca ttc ata tta cgg gcc acc cga tta gga ttc Val Ala Pro Tyr Phe Ser Phe Ile Leu Arg Ala Thr Arg Leu Gly Phe 595 600 605			1824
ttg gta act caa agc gag gta cat agg tca gag gaa gag tta tgc cag Leu Val Thr Gln Ser Glu Val His Arg Ser Glu Glu Glu Leu Cys Gln 610 615 620			1872
gct att ttt aaa aag gcg aga aca gag tcc tat tta tcc caa atc cga Ala Ile Phe Lys Lys Ala Arg Thr Glu Ser Tyr Leu Ser Gln Ile Arg 625 630 635 640			1920
ata tta tat gaa atg cag gtt cgc gca gag gta ata aaa cgg ggc cca Ile Leu Tyr Glu Met Gln Val Arg Ala Glu Val Ile Lys Arg Gly Pro 645 650 655			1968
cgg aga aca cca agt cct tcc tgg ggt ttg cct gac cct aca gaa gat Arg Arg Thr Pro Ser Pro Ser Trp Gly Leu Pro Asp Pro Thr Glu Asp 660 665 670			2016
gac gaa aga atc ccg gaa ccc aat aaa ata aat aac caa tac atg cat Asp Glu Arg Ile Pro Glu Pro Asn Lys Ile Asn Asn Gln Tyr Met His 675 680 685			2064
gtt gga tat aaa aac cta tcc cat ttt atg aaa gga cac ccc cct gag Val Gly Tyr Lys Asn Leu Ser His Phe Met Lys Gly His Pro Pro Glu 690 695 700			2112
agg tta cgg gta cac aag gta aat gca gcg gat tcg acc tta ctg gat Arg Leu Arg Val His Lys Val Asn Ala Ala Asp Ser Thr Leu Leu Asp 705 710 715 720			2160
aaa att cga gca aac cgg agg cgc ggg gat ggc cga tgg gat gtc cgg Lys Ile Arg Ala Asn Arg Arg Arg Gly Asp Gly Arg Trp Asp Val Arg 725 730 735			2208
aat aaa tat acc cag cat ttt agg ttg cag cgt aac gat cga caa ctt Asn Lys Tyr Thr Gln His Phe Arg Leu Gln Arg Asn Asp Arg Gln Leu 740 745 750			2256
act aac acg agc cga aga ggg gtt gga tgt gag cga cgt gat cga aga Thr Asn Thr Ser Arg Arg Gly Val Gly Cys Glu Arg Arg Asp Arg Arg 755 760 765			2304
tct tag Ser			2310

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 <212> PRT  
 <213> Varicella zoster

<400> 85

Met	Ala	Glu	Ile	Thr	Ser	Leu	Phe	Asn	Asn	Ser	Ser	Gly	Ser	Glu	Glu
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Lys Arg Ile Ala Ser Ser Val Ser Ile Asp Gln Gly Leu Asn Gly Ser  
 20 25 30  
 Asn Pro Asn Asp Gln Tyr Lys Asn Met Phe Asp Ile Tyr Trp Asn Glu  
 35 40 45  
 Tyr Ala Pro Asp Ile Gly Phe Cys Thr Phe Pro Glu Glu Asp Gly Trp  
 50 55 60  
 Met Leu Ile His Pro Thr Thr Gln Ser Met Leu Phe Arg Lys Ile Leu  
 65 70 75 80  
 Ala Gly Asp Phe Gly Tyr Thr Asp Gly Gln Gly Ile Tyr Ser Ala Val  
 85 90 95  
 Arg Ser Thr Glu Thr Val Ile Arg Gln Val Gln Ala Thr Val Leu Met  
 100 105 110  
 Asn Ala Leu Asp Ala Thr Arg Tyr Glu Asp Leu Ala Ala Asp Trp Glu  
 115 120 125  
 His His Ile Gln Gln Cys Asn Leu His Ala Gly Ala Leu Ala Glu Arg  
 130 135 140  
 Tyr Gly Leu Cys Gly Glu Ser Glu Ala Val Arg Leu Ala His Gln Val  
 145 150 155 160  
 Phe Glu Thr Trp Arg Gln Thr Leu Gln Ser Ser Leu Leu Glu Phe Leu  
 165 170 175  
 Arg Gly Ile Thr Gly Cys Leu Tyr Thr Ser Gly Leu Asn Gly Arg Val  
 180 185 190  
 Gly Phe Ala Lys Tyr Val Asp Trp Ile Ala Cys Val Gly Ile Val Pro  
 195 200 205  
 Val Val Arg Lys Val Arg Ser Glu Gln Asn Gly Thr Pro Ala Pro Leu  
 210 215 220  
 Asn Thr Tyr Met Gly Gln Ala Ala Glu Leu Ser Gln Met Leu Lys Val  
 225 230 235 240  
 Ala Asp Ala Thr Leu Ala Arg Gly Ala Ala Val Val Thr Ser Leu Val  
 245 250 255



Glu Cys Met Gln Asn Val Ala Ile Met Asp Tyr Asp Arg Thr Arg Leu  
 260 265 270

Tyr Tyr Asn Tyr Asn Arg Arg Leu Ile Met Ala Lys Asp Asp Val Thr  
 275 280 285

Gly Met Lys Gly Glu Cys Leu Val Val Trp Pro Pro Val Val Cys Gly  
 290 295 300

Glu Gly Val Val Phe Asp Ser Pro Leu Gln Arg Leu Ser Gly Glu Val  
 305 310 315 320

Leu Ala Cys Tyr Ala Leu Arg Glu His Ala Arg Val Cys Gln Val Leu  
 325 330 335

Asn Thr Ala Pro Leu Arg Val Leu Ile Gly Arg Arg Asn Glu Asp Asp  
 340 345 350

Arg Ser His Ser Thr Arg Ala Val Asp Arg Ile Met Gly Glu Asn Asp  
 355 360 365

Thr Thr Arg Ala Gly Ser Ala Ala Ser Arg Leu Val Lys Leu Ile Val  
 370 375 380

Asn Leu Lys Asn Met Arg His Val Gly Asp Ile Thr Glu Thr Val Arg  
 385 390 395 400

Ser Tyr Leu Glu Glu Thr Gly Asn His Ile Leu Glu Gly Ser Gly Ser  
 405 410 415

Val Asp Thr Ser Gln Pro Gly Phe Gly Lys Ala Asn Gln Ser Phe Asn  
 420 425 430

Gly Gly Ala Met Ser Gly Thr Thr Asn Val Gln Ser Ala Phe Lys Thr  
 435 440 445

Ser Val Val Asn Ser Ile Asn Gly Met Leu Glu Gly Tyr Val Asn Asn  
 450 455 460

Leu Phe Lys Thr Ile Glu Gly Leu Lys Asp Val Asn Ser Asp Leu Thr  
 465 470 475 480

Glu Arg Leu Gln Phe Lys Glu Gly Glu Leu Lys Arg Leu Arg Glu Glu  
 485 490 495



Arg Val Lys Ile Lys Pro Ser Lys Gly Ser His Ile Thr Met Ala Glu  
500 505 510

Glu Thr Arg Ile Ala Asp Leu Asn His Glu Val Ile Asp Leu Thr Gly  
515 520 525

Ile Ile Gly Asp Asp Ala Tyr Ile Ala Asn Ser Phe Gln Ser Arg Tyr  
530 535 540

Ile Pro Pro Tyr Gly Asp Asp Ile Lys Arg Leu Ser Glu Leu Trp Lys  
545 550 555 560

Gln Glu Leu Val Arg Cys Phe Lys Leu His Arg Val Asn Asn Asn Gln  
565 570 575

Gly Gln Glu Ile Ser Val Ser Tyr Ser Asn Ala Ser Ile Ser Leu Leu  
580 585 590

Val Ala Pro Tyr Phe Ser Phe Ile Leu Arg Ala Thr Arg Leu Gly Phe  
595 600 605

Leu Val Thr Gln Ser Glu Val His Arg Ser Glu Glu Glu Leu Cys Gln  
610 615 620

Ala Ile Phe Lys Lys Ala Arg Thr Glu Ser Tyr Leu Ser Gln Ile Arg  
625 630 635 640

Ile Leu Tyr Glu Met Gln Val Arg Ala Glu Val Ile Lys Arg Gly Pro  
645 650 655

Arg Arg Thr Pro Ser Pro Ser Trp Gly Leu Pro Asp Pro Thr Glu Asp  
660 665 670

Asp Glu Arg Ile Pro Glu Pro Asn Lys Ile Asn Asn Gln Tyr Met His  
675 680 685

Val Gly Tyr Lys Asn Leu Ser His Phe Met Lys Gly His Pro Pro Glu  
690 695 700

Arg Leu Arg Val His Lys Val Asn Ala Ala Asp Ser Thr Leu Leu Asp  
705 710 715 720

Lys Ile Arg Ala Asn Arg Arg Arg Gly Asp Gly Arg Trp Asp Val Arg  
725 730 735



Asn Lys Tyr Thr Gln His Phe Arg Leu Gln Arg Asn Asp Arg Gln Leu  
740 745 750

Thr Asn Thr Ser Arg Arg Gly Val Gly Cys Glu Arg Arg Asp Arg Arg  
755 760 765

Ser

<210> 86  
<211> 666  
<212> DNA  
<213> Varicella zoster

<220>  
<221> CDS  
<222> (1)..(666)

<400> 86  
atg ttt tcg gag ttg cct cct tcc gta ccg acg gca ttg ctt caa tgg 48  
Met Phe Ser Glu Leu Pro Pro Ser Val Pro Thr Ala Leu Leu Gln Trp  
1 5 10 15  
ggt tgg gga ttg cat cgt gga ccg tgt tcg atc cca aat ttt aaa cag 96  
Gly Trp Gly Leu His Arg Gly Pro Cys Ser Ile Pro Asn Phe Lys Gln  
20 25 30  
gta gcc agc caa cac agt gtt cag aac gat ttt aca gaa aat agc gtt 144  
Val Ala Ser Gln His Ser Val Gln Asn Asp Phe Thr Glu Asn Ser Val  
35 40 45  
gat gca aat gaa aaa ttt ccg att ggg cac gcg ggc tgt att gag aaa 192  
Asp Ala Asn Glu Lys Phe Pro Ile Gly His Ala Gly Cys Ile Glu Lys  
50 55 60  
acc aaa gac gac tat gta cca ttt gat acg ttg ttc atg gta tca tct 240  
Thr Lys Asp Asp Tyr Val Pro Phe Asp Thr Leu Phe Met Val Ser Ser  
65 70 75 80  
att gac gaa ctt ggg cgg aga caa tta acc gac acc atc cgc cgc agc 288  
Ile Asp Glu Leu Gly Arg Arg Gln Leu Thr Asp Thr Ile Arg Arg Ser  
85 90 95  
ttg gtt atg aac gcc tgt gaa ata acg gtc gcg tgt acg aaa acc gca 336  
Leu Val Met Asn Ala Cys Glu Ile Thr Val Ala Cys Thr Lys Thr Ala  
100 105 110  
gcc ttt tct ggt cga ggc gtg tca cga caa aaa cac gtg acc cta tct 384  
Ala Phe Ser Gly Arg Gly Val Ser Arg Gln Lys His Val Thr Leu Ser  
115 120 125  
aaa aat aaa ttc aat cca tcc agt cat aag agc ctg caa atg ttt gtg 432  
Lys Asn Lys Phe Asn Pro Ser Ser His Lys Ser Leu Gln Met Phe Val  
130 135 140



ttg tgt caa aaa acc cat gca ccc cgt gtc aga aac cta ctg tac gag	480
Leu Cys Gln Lys Thr His Ala Pro Arg Val Arg Asn Leu Leu Tyr Glu	
145 150 155 160	

agt att cgt gca aga aga cct cgc cga tat tac acc cgc tca acg gac	528
Ser Ile Arg Ala Arg Arg Pro Arg Arg Tyr Tyr Thr Arg Ser Thr Asp	
165 170 175	

gga aaa tcg cgt ccg ttg gta cca gtg ttt gtg tat gag ttt acg gct	576
Gly Lys Ser Arg Pro Leu Val Pro Val Phe Val Tyr Glu Phe Thr Ala	
180 185 190	

tta gat cgt gtc ctt tta cat aag gaa aat act ttg acc gac caa cca	624
Leu Asp Arg Val Leu Leu His Lys Glu Asn Thr Leu Thr Asp Gln Pro	
195 200 205	

att aat act gaa aat agc ggt cat gga cgt acg aga acg taa	666
Ile Asn Thr Glu Asn Ser Gly His Gly Arg Thr Arg Thr	
210 215 220	

<210> 87

<211> 221

<212> PRT

<213> Varicella zoster

<400> 87

Met Phe Ser Glu Leu Pro Pro Ser Val Pro Thr Ala Leu Leu Gln Trp
1 5 10 15

Gly Trp Gly Leu His Arg Gly Pro Cys Ser Ile Pro Asn Phe Lys Gln
20 25 30

Val Ala Ser Gln His Ser Val Gln Asn Asp Phe Thr Glu Asn Ser Val
35 40 45

Asp Ala Asn Glu Lys Phe Pro Ile Gly His Ala Gly Cys Ile Glu Lys
50 55 60

Thr Lys Asp Asp Tyr Val Pro Phe Asp Thr Leu Phe Met Val Ser Ser
65 70 75 80

Ile Asp Glu Leu Gly Arg Arg Gln Leu Thr Asp Thr Ile Arg Arg Ser
85 90 95

Leu Val Met Asn Ala Cys Glu Ile Thr Val Ala Cys Thr Lys Thr Ala
100 105 110

Ala Phe Ser Gly Arg Gly Val Ser Arg Gln Lys His Val Thr Leu Ser
115 120 125



Lys Asn Lys Phe Asn Pro Ser Ser His Lys Ser Leu Gln Met Phe Val  
 130 135 140

Leu Cys Gln Lys Thr His Ala Pro Arg Val Arg Asn Leu Leu Tyr Glu  
 145 150 155 160

Ser Ile Arg Ala Arg Arg Pro Arg Arg Tyr Tyr Thr Arg Ser Thr Asp  
 165 170 175

Gly Lys Ser Arg Pro Leu Val Pro Val Phe Val Tyr Glu Phe Thr Ala  
 180 185 190

Leu Asp Arg Val Leu Leu His Lys Glu Asn Thr Leu Thr Asp Gln Pro  
 195 200 205

Ile Asn Thr Glu Asn Ser Gly His Gly Arg Thr Arg Thr  
 210 215 220

<210> 88  
 <211> 480  
 <212> DNA  
 <213> Varicella zoster

<220>  
 <221> CDS  
 <222> (1)..(480)

<400> 88  
 atg gca tca cat aaa tgg tta ctg cag ata gtt ttt tta aaa act atc 48  
 Met Ala Ser His Lys Trp Leu Leu Gln Ile Val Phe Leu Lys Thr Ile  
 1 5 10 15  
 aca atc gcg tat tgt ctt cat ctc caa gac gac act ccg ttg ttt ttt 96  
 Thr Ile Ala Tyr Cys Leu His Leu Gln Asp Asp Thr Pro Leu Phe Phe  
 20 25 30  
 gga gcc aaa ccg cta tcg gat gtg agt ttg att ata acg gaa ccg tgc 144  
 Gly Ala Lys Pro Leu Ser Asp Val Ser Leu Ile Ile Thr Glu Pro Cys  
 35 40 45  
 gtg tca tcg gta tat gag gcg tgg gac tat gcg gca ccc ccg gta tca 192  
 Val Ser Ser Val Tyr Glu Ala Trp Asp Tyr Ala Ala Pro Pro Val Ser  
 50 55 60  
 aac ctc agc gag gcg cta tcg gga atc gtg gtt aag aca aaa tgt cca 240  
 Asn Leu Ser Glu Ala Leu Ser Gly Ile Val Val Lys Thr Lys Cys Pro  
 65 70 75 80  
 gta ccg gaa gtt ata ctt tgg ttt aaa gac aaa caa atg gcg tac tgg 288  
 Val Pro Glu Val Ile Leu Trp Phe Lys Asp Lys Gln Met Ala Tyr Trp  
 85 90 95



aca aat cca tac gtc acc tta aag ggg ctg gca caa tct gtt ggt gaa 336  
 Thr Asn Pro Tyr Val Thr Leu Lys Gly Leu Ala Gln Ser Val Gly Glu  
 100 105 110

gaa cat aaa agc ggg gac ata cgc gat gct ttg ttg gat gcc ctt tcc 384  
 Glu His Lys Ser Gly Asp Ile Arg Asp Ala Leu Leu Asp Ala Leu Ser  
 115 120 125

ggt gta tgg gta gac tct act cca tct tcc aca aat atc ccg gaa aat 432  
 Gly Val Trp Val Asp Ser Thr Pro Ser Ser Thr Asn Ile Pro Glu Asn  
 130 135 140

gga tgt gtc tgg gga gcc gac cgt ttg ttc caa cgc gta tgc caa tga 480  
 Gly Cys Val Trp Gly Ala Asp Arg Leu Phe Gln Arg Val Cys Gln  
 145 150 155

<210> 89  
 <211> 159  
 <212> PRT  
 <213> Varicella zoster

<400> 89

Met Ala Ser His Lys Trp Leu Leu Gln Ile Val Phe Leu Lys Thr Ile  
 1 5 10 15

Thr Ile Ala Tyr Cys Leu His Leu Gln Asp Asp Thr Pro Leu Phe Phe  
 20 25 30

Gly Ala Lys Pro Leu Ser Asp Val Ser Leu Ile Ile Thr Glu Pro Cys  
 35 40 45

Val Ser Ser Val Tyr Glu Ala Trp Asp Tyr Ala Ala Pro Pro Val Ser  
 50 55 60

Asn Leu Ser Glu Ala Leu Ser Gly Ile Val Val Lys Thr Lys Cys Pro  
 65 70 75 80

Val Pro Glu Val Ile Leu Trp Phe Lys Asp Lys Gln Met Ala Tyr Trp  
 85 90 95

Thr Asn Pro Tyr Val Thr Leu Lys Gly Leu Ala Gln Ser Val Gly Glu  
 100 105 110

Glu His Lys Ser Gly Asp Ile Arg Asp Ala Leu Leu Asp Ala Leu Ser  
 115 120 125

Gly Val Trp Val Asp Ser Thr Pro Ser Ser Thr Asn Ile Pro Glu Asn  
 130 135 140



Gly Cys Val Trp Gly Ala Asp Arg Leu Phe Gln Arg Val Cys Gln  
 145 150 155

<210> 90  
 <211> 909  
 <212> DNA  
 <213> Varicella zoster

<220>  
 <221> CDS  
 <222> (1)..(909)

<400> 90  
 atg gct tct gta gca ggt aac gct agt aat atc tca cca cag ccc ccg 48  
 Met Ala Ser Val Ala Gly Asn Ala Ser Asn Ile Ser Pro Gln Pro Pro  
 1 5 10 15  
 tcg ggc gtt cca acc gga ggg gaa ttt gta ctg ata cct acc gcg tat 96  
 Ser Gly Val Pro Thr Gly Gly Glu Phe Val Leu Ile Pro Thr Ala Tyr  
 20 25 30  
 tat tca cag ctg tta acc ggg cag act aaa aat ccg cag gta tca att 144  
 Tyr Ser Gln Leu Leu Thr Gly Gln Thr Lys Asn Pro Gln Val Ser Ile  
 35 40 45  
 gga gct cca aat aac gga cag tat atc gtc ggg cca tat gga tct cca 192  
 Gly Ala Pro Asn Asn Gly Gln Tyr Ile Val Gly Pro Tyr Gly Ser Pro  
 50 55 60  
 cac ccg cct gcc ttc cca cct aat aca ggg ggt tat ggt tgc cct ccg 240  
 His Pro Pro Ala Phe Pro Pro Asn Thr Gly Gly Tyr Gly Cys Pro Pro  
 65 70 75 80  
 gga cac ttc ggg gga ccg tac ggg ttt ccg gga tat cca cca ccc aat 288  
 Gly His Phe Gly Gly Pro Tyr Gly Phe Pro Gly Tyr Pro Pro Pro Asn  
 85 90 95  
 cgt ttg gaa atg caa atg tcc gca ttt atg aac gca ttg gcc gcc gaa 336  
 Arg Leu Glu Met Gln Met Ser Ala Phe Met Asn Ala Leu Ala Ala Glu  
 100 105 110  
 cgg ggt att gac ttg cag acc ccg tgt gta aat ttt cca gac aaa acc 384  
 Arg Gly Ile Asp Leu Gln Thr Pro Cys Val Asn Phe Pro Asp Lys Thr  
 115 120 125  
 gat gtc cgt cgt cca gga aaa cgg gat ttc aag agc atg gat caa agg 432  
 Asp Val Arg Arg Pro Gly Lys Arg Asp Phe Lys Ser Met Asp Gln Arg  
 130 135 140  
 gaa ttg gat tct ttt tat agt ggg gag tct caa atg gac gga gag ttt 480  
 Glu Leu Asp Ser Phe Tyr Ser Gly Glu Ser Gln Met Asp Gly Glu Phe  
 145 150 155 160  
 ccc tca aat ata tat ttt ccc ggt gaa cca acg tat ata acg cat cgg 528  
 Pro Ser Asn Ile Tyr Phe Pro Gly Glu Pro Thr Tyr Ile Thr His Arg  
 165 170 175  
 aga cgt cga gtt tct cca tca tat tgg cag agg aga cac aga gtt tct 576



Arg Arg Arg Val Ser Pro Ser Tyr Trp Gln Arg Arg His Arg Val Ser	
180 185 190	
aat ggt cag cac gaa gag ctt gct ggg gtt gtg gca aaa ctg caa cag	624
Asn Gly Gln His Glu Glu Leu Ala Gly Val Val Ala Lys Leu Gln Gln	
195 200 205	
gag gtt aca gag cta aaa tca caa aat ggg aca caa atg cct ttg tcg	672
Glu Val Thr Glu Leu Lys Ser Gln Asn Gly Thr Gln Met Pro Leu Ser	
210 215 220	
cac cat aca aat ata cca gag ggg aca cgg gat cct cga ata tcg att	720
His His Thr Asn Ile Pro Glu Gly Thr Arg Asp Pro Arg Ile Ser Ile	
225 230 235 240	
tta tta aaa cag ctt caa agc gtt tcg ggt cta tgc tca tcc caa aat	768
Leu Leu Lys Gln Leu Gln Ser Val Ser Gly Leu Cys Ser Ser Gln Asn	
245 250 255	
aca aca agc acc cca cat aca gat aca gtt gga caa gat gta aat gca	816
Thr Thr Ser Thr Pro His Thr Asp Thr Val Gly Gln Asp Val Asn Ala	
260 265 270	
gtg gag gcg agt tcc aag gcc cct tta ata cag ggg tcc acg gca gac	864
Val Glu Ala Ser Ser Lys Ala Pro Leu Ile Gln Gly Ser Thr Ala Asp	
275 280 285	
gac gcc gat atg ttt gca aat cag atg atg gtg ggg cgg tgt taa	909
Asp Ala Asp Met Phe Ala Asn Gln Met Met Val Gly Arg Cys	
290 295 300	

<210> 91  
 <211> 302  
 <212> PRT  
 <213> Varicella zoster

<400> 91

Met Ala Ser Val Ala Gly Asn Ala Ser Asn Ile Ser Pro Gln Pro Pro
1 5 10 15

Ser Gly Val Pro Thr Gly Gly Glu Phe Val Leu Ile Pro Thr Ala Tyr
20 25 30

Tyr Ser Gln Leu Leu Thr Gly Gln Thr Lys Asn Pro Gln Val Ser Ile
35 40 45

Gly Ala Pro Asn Asn Gly Gln Tyr Ile Val Gly Pro Tyr Gly Ser Pro
50 55 60

His Pro Pro Ala Phe Pro Pro Asn Thr Gly Gly Tyr Gly Cys Pro Pro
65 70 75 80

Gly His Phe Gly Gly Pro Tyr Gly Phe Pro Gly Tyr Pro Pro Pro Asn
445



85

90

95

Arg Leu Glu Met Gln Met Ser Ala Phe Met Asn Ala Leu Ala Ala Glu  
 100 105 110

Arg Gly Ile Asp Leu Gln Thr Pro Cys Val Asn Phe Pro Asp Lys Thr  
 115 120 125

Asp Val Arg Arg Pro Gly Lys Arg Asp Phe Lys Ser Met Asp Gln Arg  
 130 135 140

Glu Leu Asp Ser Phe Tyr Ser Gly Glu Ser Gln Met Asp Gly Glu Phe  
 145 150 155 160

Pro Ser Asn Ile Tyr Phe Pro Gly Glu Pro Thr Tyr Ile Thr His Arg  
 165 170 175

Arg Arg Arg Val Ser Pro Ser Tyr Trp Gln Arg Arg His Arg Val Ser  
 180 185 190

Asn Gly Gln His Glu Glu Leu Ala Gly Val Val Ala Lys Leu Gln Gln  
 195 200 205

Glu Val Thr Glu Leu Lys Ser Gln Asn Gly Thr Gln Met Pro Leu Ser  
 210 215 220

His His Thr Asn Ile Pro Glu Gly Thr Arg Asp Pro Arg Ile Ser Ile  
 225 230 235 240

Leu Leu Lys Gln Leu Gln Ser Val Ser Gly Leu Cys Ser Ser Gln Asn  
 245 250 255

Thr Thr Ser Thr Pro His Thr Asp Thr Val Gly Gln Asp Val Asn Ala  
 260 265 270

Val Glu Ala Ser Ser Lys Ala Pro Leu Ile Gln Gly Ser Thr Ala Asp  
 275 280 285

Asp Ala Asp Met Phe Ala Asn Gln Met Met Val Gly Arg Cys  
 290 295 300